IM10013

November, 2011

DOWNFLEX 200/400

For use with machines having Code Numbers: **K2751-2, K2751-3, K2751-4, CK 2751-2, CK 2751-3, CK 2751-4, CK 2751-25, CK 2751-35**

Safety Depends on You

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.

INSTRUCTION MANUAL

ISO 9001

Designed and Manufactured Under a Quality Program Certified by ABS Quality Evaluations, Inc. to ISO 9001 Requirements.
CERTIFICATE NUMBER: 30273

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LINCOLN® ELECTRIC

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Cleveland, Ohio 44117-1199 U.S.A. TEL: 888.935.3878 FAX: 216.383.8823 WEB SITE: www.lincolnelectric.com

⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.

FOR ENGINE powered equipment.

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.

1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

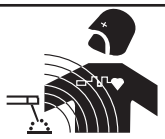
1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



ELECTRIC AND MAGNETIC FIELDS may be dangerous

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

ELECTRIC SHOCK can kill.

3.a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- **Semiautomatic DC Constant Voltage (Wire) Welder.**
- **DC Manual (Stick) Welder.**
- **AC Welder with Reduced Voltage Control.**

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.

ARC RAYS can burn.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES can be dangerous.

5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**

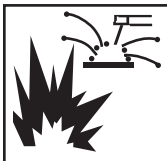
5. b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.

5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.e. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.



WELDING and CUTTING SPARKS can cause fire or explosion.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.

6.I. Read and follow NFPA 51B " Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, Ma 022690-9101.

6.j. Do not use a welding power source for pipe thawing.

CYLINDER may explode if damaged.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

7.c. Cylinders should be located:
- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-I, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.

FOR ELECTRICALLY powered equipment.

8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.

8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.

8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

Refer to **http://www.lincolnelectric.com/safety** for additional safety information.

PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté specifiques qui parraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

Sûreté Pour Soudage A L'Arc

1. Protegez-vous contre la secousse électrique:

   a. Les circuits à l'électrode et à la piéce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vétements mouillés. Porter des gants secs et sans trous pour isoler les mains.
   b. Faire trés attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher metallique ou des grilles metalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
   c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état defonctionnement.
   d.Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
   e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
   f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces precautions pour le porte-électrode s'applicuent aussi au pistolet de soudage.

2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas ou on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.

3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:

   a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
   b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
   c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.

4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.

5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans lateraux dans les zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.

7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidental peut provoquer un échauffement et un risque d'incendie.

8. S'assurer que la masse est connectée le plus prés possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaines de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'echauffement des chaines et des câbles jusqu'à ce qu'ils se rompent.

9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particuliérement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.

10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgéne (gas fortement toxique) ou autres produits irritants.

11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le chassis du poste conformement au code de l'électricité et aux recommendations du fabricant. Le dispositif de montage ou la piece à souder doit être branché à une bonne mise à la terre.

2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.

3. Avant de faires des travaux à l'interieur de poste, la debrancher à l'interrupteur à la boite de fusibles.

4. Garder tous les couvercles et dispositifs de sûreté à leur place.

Thank You

for selecting a **QUALITY** product by Lincoln Electric. We want you to take pride in operating this Lincoln Electric Company product ••• as much pride as we have in bringing this product to you!

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

Please Examine Carton and Equipment For Damage Immediately

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, Claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Product _____

Model Number _____

Code Number or Date Code_____

Serial Number_____

Date Purchased_____

Where Purchased_____

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above. The code number is especially important when identifying the correct replacement parts.

On-Line Product Registration

- Register your machine with Lincoln Electric either via fax or over the Internet.
  - For faxing: Complete the form on the back of the warranty statement included in the literature packet accompanying this machine and fax the form per the instructions printed on it.
  - For On-Line Registration: Go to our **WEB SITE at www.lincolnelectric.com.** Choose "Support" and then "Register Your Product". Please complete the form and submit your registration.

Read this Operators Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. The level of seriousness to be applied to each is explained below:

⚠ WARNING

This statement appears where the information **must** be followed **exactly** to avoid **serious personal injury** or **loss of life**.

⚠ CAUTION

This statement appears where the information **must** be followed to avoid **minor personal injury** or **damage to this equipment**.

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TECHNICAL SPECIFICATIONS - DOWNFLEX 200/400

DIMENSIONS L x W x H	
Downdraft Table	54.3 x 39.4 x 36.2 in. (1380 x 1005 x 920 mm)
Downdraft Table incl. Backdraft Kit and Side Panels	54.3 x 39.4 x 60.8 in. (1380 x 1005 x 1543 mm)
HEIGHT ADJUSTMENT	
36 - 38 in. / 920 - 970 mm (in case of wheel kit: fixed working height 37.4 in. / 950 mm)	
WEIGHT (Without Backdraft Kit, Side Panels And Other Options)	
DownFlex 200-M	540 lbs. (245 kg)
DownFlex 400-MS	562 lbs. (255 kg)
DownFlex 400-MS/A	562 lbs. (255 kg)
MAXIMUM LOAD	
440 lbs. (200 kg) (In Case Of Wheel Kit: 330 lbs. (150kg))	
CONNECTION VOLTAGE	
USA - 208-240V/480V/3ph/60Hz CANADA - 600V/3ph/60	
DEFAULT SETTING USA	
480V	
POWER CONSUMPTION	
3 kw (4HP)	
MAINS CORD	
10 ft. / 3 m (3.3 ft. / 1 m internal, 6.6 ft. / 2 m external) - without plug	
SUPPLY CABLE FOR POWER OUTLET	
10 ft. / 3 m (3.3 ft. / 1 m internal, 6.6 ft. / 2 m external) - without plug	
POWER OUTLET	
Plug Type B (USA: NEMA 5 - 15; CANADA: CS22.2, n°42)	
120V/ max. 1200W	
PROTECTION CLASS	
NEMA 1 (control box only)	
SOUND LEVEL	
Without Options	78 db(A)
With Silencer	74 db(A)
With Silencer And HEPA Kit	71 db(A)
MAIN FILTER SURFACE AREA	
2 x 280 ft^2 (2 x 26 m^2)	
FILTER CLASS ACCORDING TO DIN EN 60335-2-69	
M	

AMBIENT CONDITIONS			
Min. Operating Temp	**Nom. Operating Temp**	**Max. Operating Temp**	**Max. Relative Humidity**
41°F (5°C)	68°F (20°C)	104°F (40°C)	80%

DownFlex 400-MS and DownFlex 400-MS/A only:	
Compressed Air Connection	3/8” (female)
Compressed Air Pressure	72 - 115 psi (5 - 8 bar)
Required Compressed Air Quality	dry and oil-free

GENERAL DESCRIPTION

The downdraft table is a workbench with an integrated extraction fan and filtration system that is used for welding, grinding and plasma cutting applications. Depending on the specific application, the use of certain accessories is required and/or recommended. See ***Accessories section*** of this manual.

The downdraft table features a work grid, a three-stage prefiltration system for optimum spark arresting and two oval main filter cartridges. Both pre and main filters have dust drawers underneath. The working height of the downdraft table is adjustable. The control panel contains a 120V power outlet for connection of any device, such as a vacuum cleaner or grinding machine (max. 1200W).

INTENDED USE

The product has been designed as a workbench with integrated extraction and filtration facility for welding and grinding purposes, provided the appropriate options have been installed (***See Accessories Section*** of this manual). Using the product for other purposes is considered contrary to its intended use. The manufacturer accepts no liability for any damage or injury resulting from such use. The product has been built in accordance with state-of-the-art standards and recognized safety regulations. Only use this product when in technically perfect condition in accordance with its intended use and the instructions explained in the user manual.

COMPONENTS

The downdraft table consists of the following main components See Figures A.1 and A.2:

A. Backdraft kit

B. Side panels (left + right)

C. Work grid (two-piece)

D. Control panel

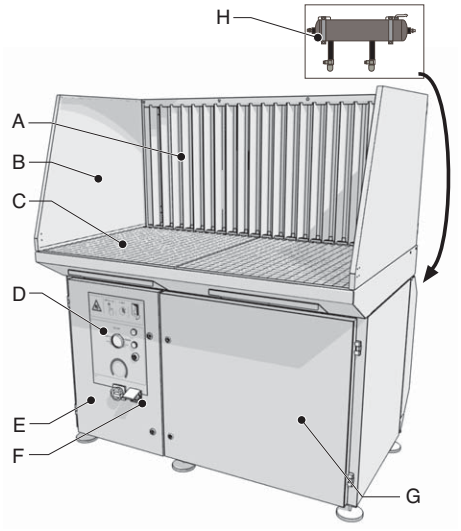
E. Left door (controls/fan)

F. Power outlet

G. Right door (filter compartment)

H. Compressed air tank (DownFlex 400-MS and DownFlex 400-MS/A only)

FIGURE A.1 – COMPONENTS



I. Prefilters (1st stage)

J. Dust drawers (prefiltration)

K. Dust drawer (main filter cartridges)

L. Filter cleaning mechanism (DownFlex 400-MS and DownFlex 400-MS/A only)

M. Filter cartridges (2)

N. Prefilters (2nd stage)

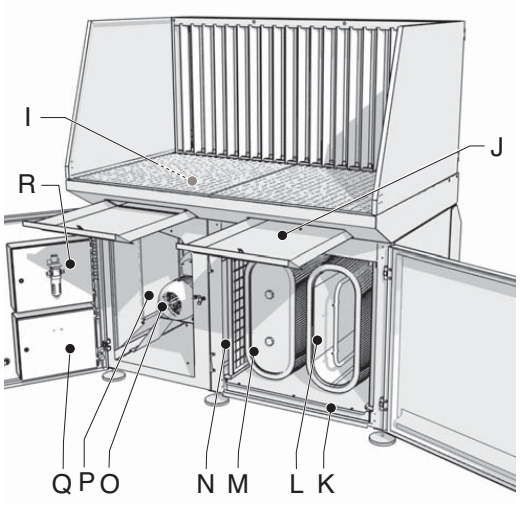
O. Fan

P. Outlet grid

Q. Electrics high voltage

R. Electrics low voltage

FIGURE A.2 – COMPONENTS



INSTALLATION

TOOLS AND REQUIREMENTS

The following tools and requirements are needed to install the product:

- Spanner M6 and M8
- Hexagon wrench 10 and 13 (1/2 in.)

UNPACKING

Check that the product is complete. The package should contain:

- Downdraft table
- Work grid (two-piece)
- Cover strip with 8 bolts M6 (cover strip not included when backdraft kit and side panels are standard equipment; bolts packed with backdraft kit)
- Square key 8 mm (to lock/unlock doors)
- Square key 6 mm (to lock/unlock dust drawers and doors of electrics)

If parts are missing or damaged, contact your supplier.

OPTIONS

Mount optional side panels, back panel, backdraft kit, and/or plasma cutting work grid, if any. Otherwise, refer to ***Work Grid*** for mounting of work grid.

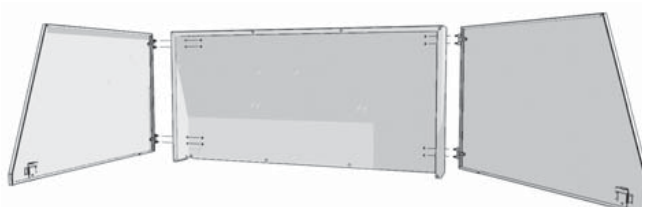
SIDE PANELS

Side panels are to be mounted to the back panel or backdraft kit. See Figure A.3.

To mount the side panels, proceed as follows.

1. Unscrew the bolts on the loose side of the hinges and remove the washers; keep the bolts and washers.
2. Put the pins through the holes on the sides of the back panel or backdraft panel.
3. Place the washers and bolts over the pins.
4. Tighten the bolts.

FIGURE A.3 – SIDE PANELS

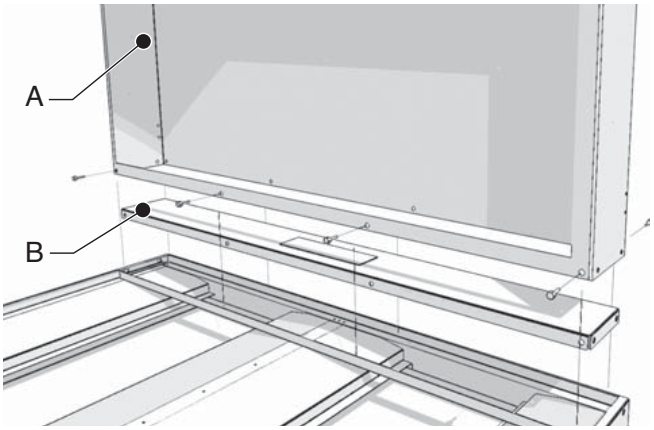


BACK PANEL

To mount the back panel, proceed as follows. See Figure A.4.

1. Unscrew the cover strip.
2. Place the back panel (A). See Figure A.4.
3. Place the cover strip (B) inside the back panel. See Figure A.4.
4. Fasten the back panel and cover strip using the 8 bolts.

FIGURE A.4 – BACK PANEL



BACKDRAFT KIT

The backdraft kit consists of:

- Backdraft panel
- 2 Narrowing plates

NOTE: When the downdraft table will be used for grinding only, it is not necessary to mount the narrowing plates. For welding and plasma cutting, however, the narrowing plates are required.

To mount the backdraft kit, proceed as follows.

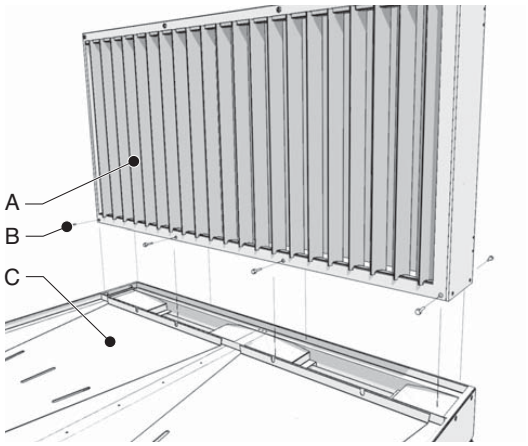
1. Unscrew the cover strip. (Keep the 8 bolts)

NOTE: Downdraft table contains no cover strip when backdraft kit and side panels are standard equipment; bolts packed with backdraft kit.

2. Place the narrowing plates (C). ***See Figure A.5***.
3. Place the backdraft panel (A). ***See Figure A.5***.
4. Fasten the narrowing plates and the backdraft panel using the 8 bolts (B). ***See Figure A.5***.

The supplied cover strip is not used.

FIGURE A.5 – BACKDRAFT KIT



PLASMA CUTTING WORK GRID

The plasma cutting work grid consists of:

- 2 Grid frames 28.9 x 26.3 x 2.5 in. (735 x 669 x 64 mm)
- 2 x 13 Metal bars 28.54 x 2.36 x 0.16 in. (725 x 60 x 4 mm)
- 2 Additional perforated steel spark arresters

To mount the plasma cutting work grid, proceed as follows.

1. Place the perforated steel spark arresters over the prefilters (A). The edgeless sides should be directed to the back. See Figure A.6.

⚠ CAUTION

Do not remove the standard prefilters.

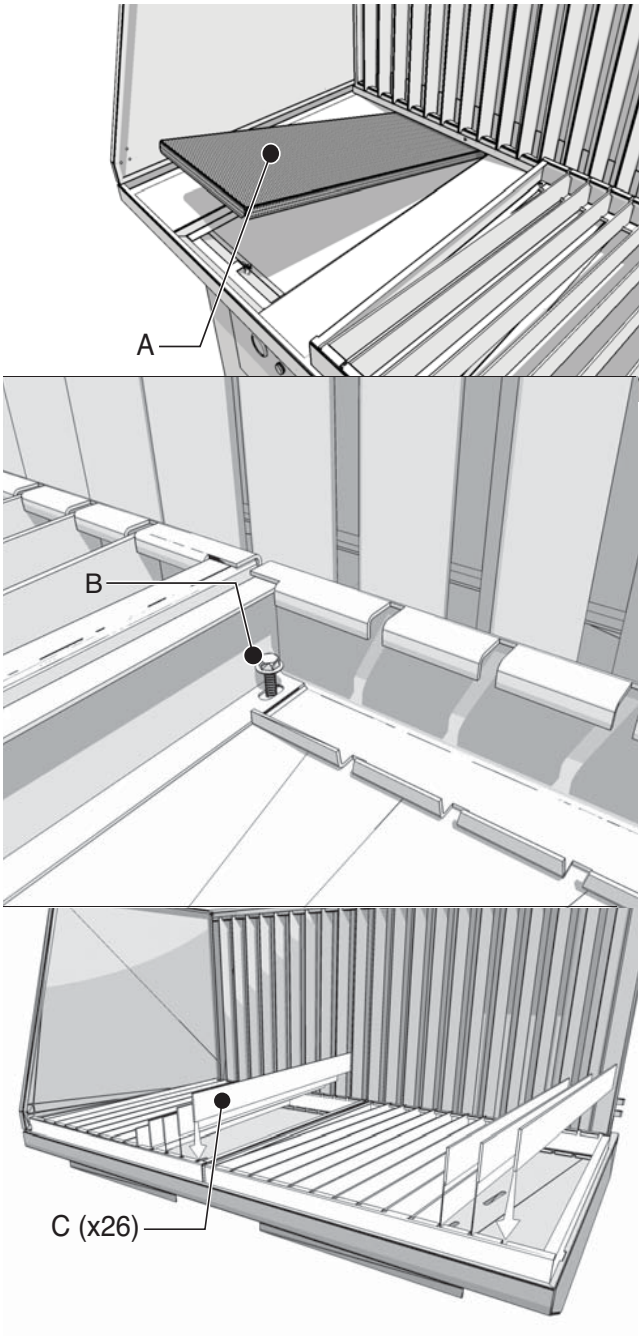
2. Remove the ground bracket at the position of the work grid. Keep the two bolts.
3. Place the frames into position.
4. Fasten the frames using the 2 bolts (B). See Figure A.6.

NOTE: It is necessary to install the bolts to ground the work grids.

5. Place the bars (C). See Figure A.6.

NOTE: The supplied standard work grid and the ground bracket are not used.

FIGURE A.6 – PLASMA CUTTING WORK GRID

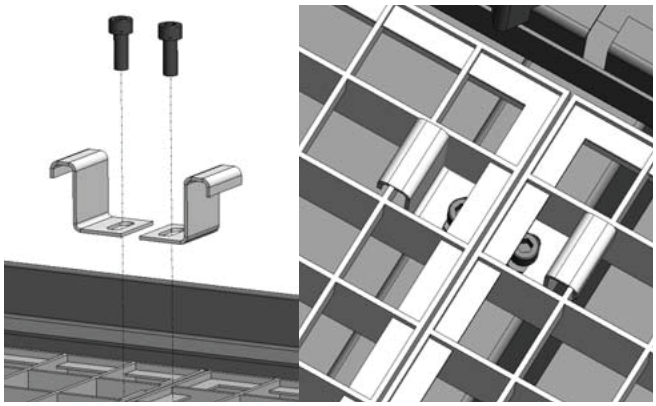


WORK GRID

To mount the standard work grid, proceed as follows. See Figure A.7.

1. Loosen the ground bracket.
2. Place the work grids into position.
3. Place the ground bracket over both work grids.
4. Tighten the ground bracket.

FIGURE A.7 – WORK GRID



NOTE: It is necessary to install the bracket to ground the work grids.

INSTALLATION OF REMAINING OPTIONS

HEPA KIT

⚠ ATTENTION

Handle HEPA box and filter cartridge with care during unpacking and mounting to avoid damage.

The HEPA kit consists of:

- HEPA box with filter
- 2 Adjustable feet
- 4 Spare bolts M6
- Draft strip

To mount the HEPA kit, proceed as follows.

1. Unscrew and remove the outlet panel from the downdraft table. Keep he 4 screws ***See Figure A.8***, top image.
2. Apply the draft strip to the downdraft table (A). ***See Figure A.8.***
3. Unlock the HEPA filter cartridge by pressing a screwdriver or other tool at the position of the strips (B) on the top and bottom of unit. ***See Figure A.8.***
4. Take out the filter cartridge.
5. Mount the adjustable feet underneath the HEPA kit.

NOTE: Remove the outlet panel from the HEPA kit, as well as the outlet grid inside the downdraft table, to facilitate mounting. Don't forget to replace them when mounting is complete.

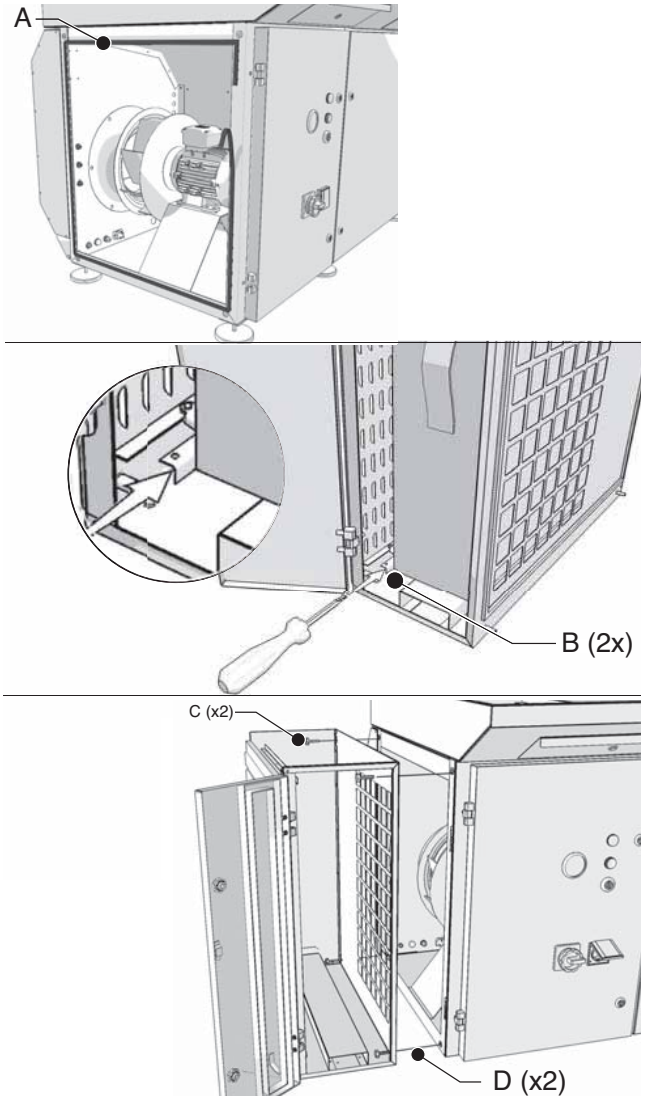
6. Place bolts halfway through the 2 upper holes (C) at the outlet of the downdraft table. ***See Figure A.8.***
7. Hang the HEPA box on the bolts.
8. Place bolts through the 2 lower holes (D) in the HEPA box. ***See Figure A.8.***
9. Fasten the HEPA box by tightening the 4 bolts (C+D). ***See Figure A.8.***
10. Replace the filter cartridge.
11. Lock the filter cartridge by pulling the two straps tightly. This is indicated by a "click" sound.

NOTE: If a Silencer/Outlet duct has to be installed as well, the outlet panel of the HEPA kit does not need to be mounted.

12. Adjust the feet when the downdraft table is placed in place in its final position.

NOTE: The outlet panel of the downdraft table is not used.

FIGURE A.8 – HEPA KIT



SILENCER/OUTLET DUCT

The Silencer/Outlet duct consists of:

• Shaft

• Draft strip

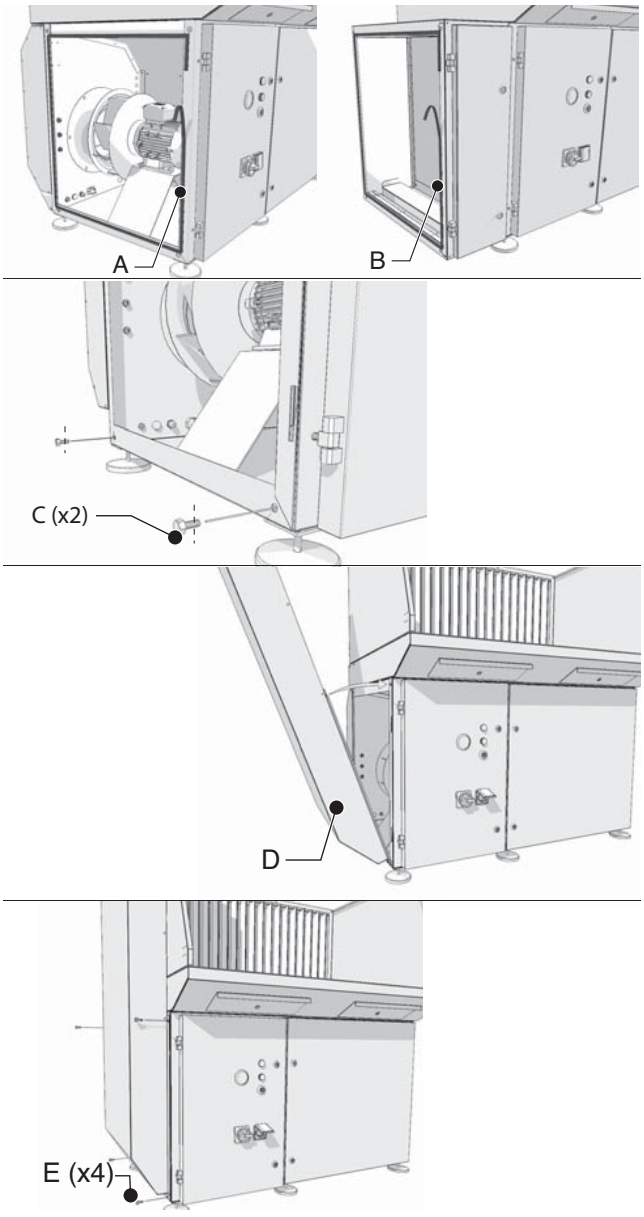
The Silencer/outlet duct can be connected to the HEPA kit or directly to the downdraft table.

To mount the silencer/outlet duct, proceed as follows. See Figure A.9.

1. If necessary: unscrew the outlet panel of the downdraft table or the outlet panel of the HEPA kit. Keep the 4 bolts.
2. Apply the draft strip to the downdraft table (A) or HEPA kit (B). See Figure A.9.
3. Place bolts halfway through the 2 lower holes at the outlet of the downdraft table or HEPA box (C). See Figure A.9.
4. Place the silencer/outlet duct over the bolts (D). See Figure A.9.
5. Put the silencer/outlet duct in an upright position and place 2 bolts in the 2 upper holes.
6. Fasten the silencer/outlet duct by tightening the 4 bolts (E). See Figure A.9.

NOTE: The outlet panel of the downdraft table is not used.

FIGURE A.9 – SILENCER / OUTLET DUCT



WORKING LIGHT

The working light consists of:

- Lighting fixture with 7.5 ft (2.3 m) of cable and plug
- 6 Bolts M6
- 3 Tie-wraps

To mount the working light, proceed as follows.

1. Mount the lighting fixture using the 6 bolts (A). See Figure A.10.
2. Route the cable down the back side of the down-draft table.
3. Attach the cable to the back panel or backdraft panel using the 3 tie-wraps (B). See Figure A.10.
4. Connect the cable. See Figure A.11, item B.

FIGURE A.10 – WORKING LIGHT

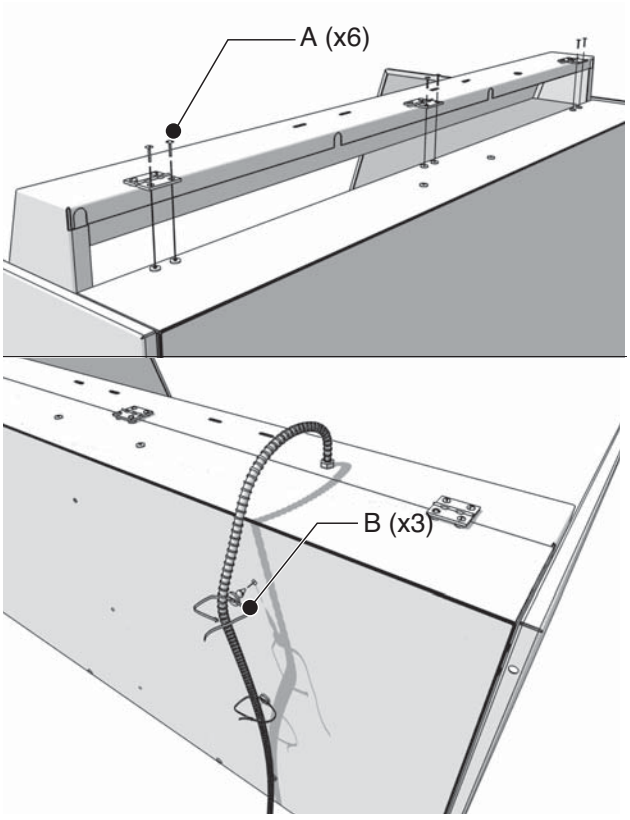
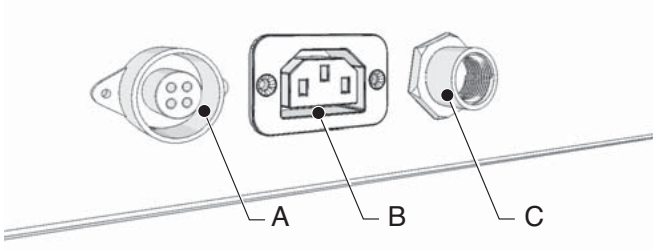


FIGURE A.11 – CONNECTIONS



MOVEMENT SENSOR

(DownFlex 400-MS/A only)

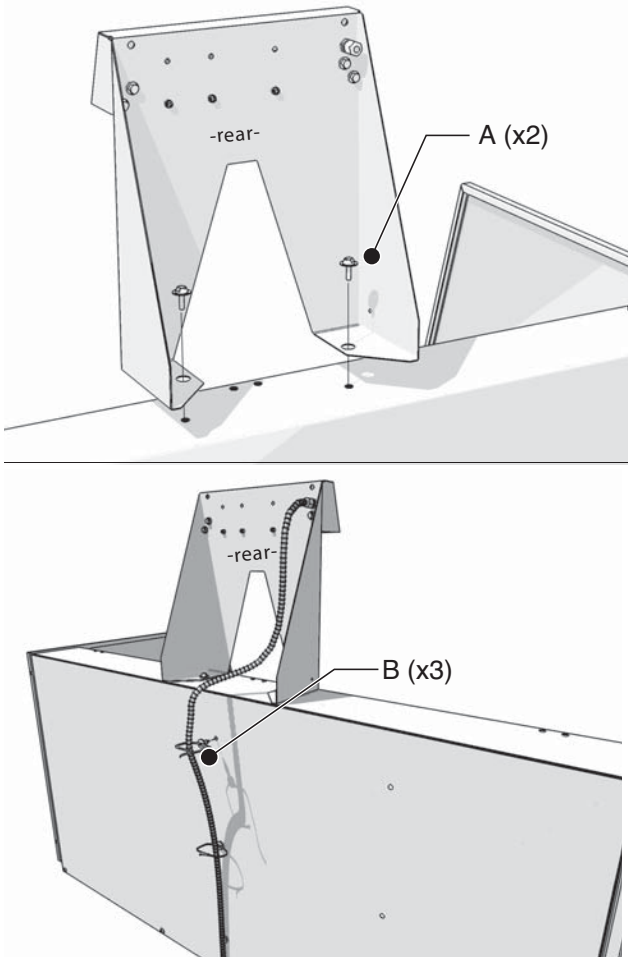
The movement sensor consists of:

- Automatic start/stop device with 7.5 ft (2.3 m) of cable and plug
- 2 Bolts M6
- 3 Tie-wraps

To mount the movement sensor, proceed as follows.

1. Mount the movement sensor on top of the back panel or backdraft panel using the 2 bolts (A). See Figure A.12.
2. Lead the cable down the back side of the downdraft table.
3. Attach the cable to the back panel or backdraft panel using the 3 tie-wraps (B). See Figure A.12.
4. Connect the cable. See Figure A.11, item A.

FIGURE A.12 – MOVEMENT SENSOR



WELDING CABLE SENSOR

(DownFlex 400-MS/A only)

The welding cable sensor consists of:

• Clamp with 7.5 ft (2.3 m) of cable and plug

To mount the welding cable sensor, proceed as follows.

1. Connect the cable. ***See Figure A.11***, item A.

BENCH VICE MOUNTING BRACKET

The bench vice mounting bracket can be mounted on the standard work grid only.

The bench vice mounting bracket consists of:

• Mounting bracket

• 2 Strips

• 4 Bolts M6

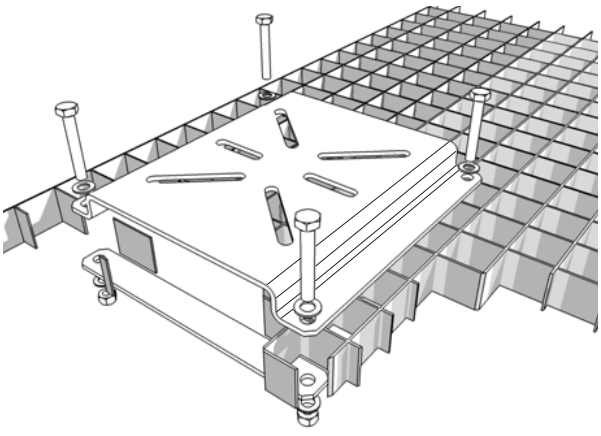
• 4 Nuts M6

• 8 Washers

To mount the bench vice mounting bracket, proceed as follows.

1. Position the mounting bracket on the grid.
2. Place the strips underneath the grid and fasten them using the bolts, nuts and washers. See Figure A.13.
3. Place the strips underneath the grid and fasten them using (from bottom to top): nut - washer - strip - grid - mounting bracket - washer - bolt.

FIGURE A.13 – BENCH VICE MOUNTING BRACKET



WHEEL KIT

The wheel kit consists of:

• 2 Swivel casters with brakes

• 3 Swivel casters without brakes

To mount the wheel kit, proceed as follows.

1. Carefully lift the downdraft table using a fork-lift truck or pallet jack.
2. Unscrew the 5 adjustable feet.
3. Mount the swivel casters; mount the ones with brakes at the left and right front corners.

NOTE: Drive in the screw thread of the swivel casters as deep as possible.

NOTE: By the use of the wheel set, the working height of the downdraft table is fixed to 37.4 in. (950 mm).

COMPRESSED AIR CONNECTION

(DownFlex 400-MS and DownFlex 400-MS/A only)

The downdraft table functions on compressed air with a recommended working pressure of 72-115 psi (5-8 bar). Always make sure that the working pressure is between these values (preferably at 72 psi/5 bar). If required, mount a pressure reducing valve to prevent overpressure. If the pressure is too high, the safety valve of the system will be opened, thus decreasing the pressure until the system pressure has reached an appropriate level.

1. Connect the downdraft table to compressed air. ***See Figure A.11***, item C. Connection ⅜ in.

POSITIONING

The downdraft table can be positioned using:

• A fork-lift truck (preferred way); or

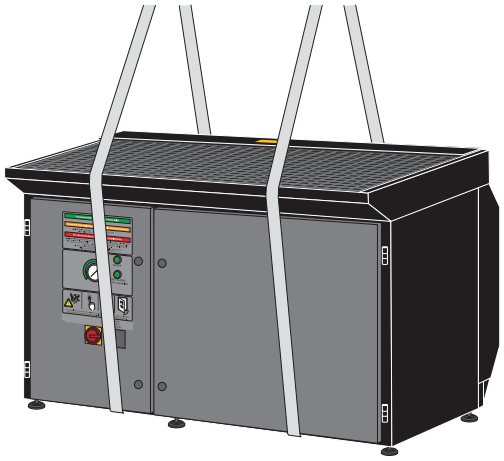
• A pallet jack (downdraft table has to be tilted); or

• Cargo lashings lifted by a fork-lift truck. See Figure A.14.

⚠ CAUTION

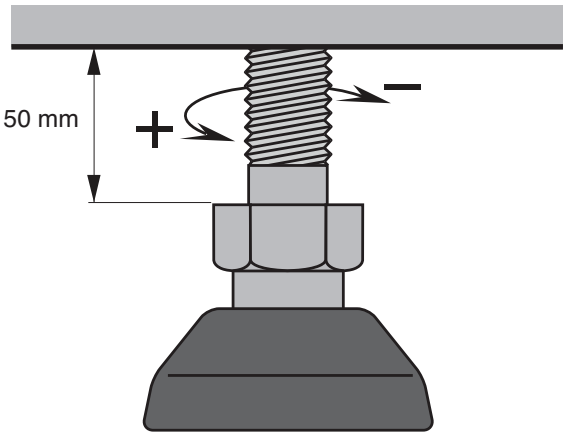
Do not position the product where it is exposed to vibrations or heat radiation from heat sources. Observe the earlier described ambient conditions.

FIGURE A.14 – CARGO LASHINGS



- Position the downdraft table against the wall.
- If necessary, use the adjusting feet to level the downdraft table and to adjust it to the desired height (min. 36 in. - max. 38 in. 920-970 mm). See Figure A.15.

FIGURE A.15 – ADJUSTABLE FEET



⚠ WARNING

FALLING EQUIPMENT can cause injury.

- **Lift only with equipment of adequate lifting capacity.**
- **Be sure machine is stable when lifting.**
- **Do not lift this machine using lift bail if it is equipped with a heavy accessory such as trailer or gas cylinder.**
- **Do not lift machine if lift bail is damaged.**
- **Do not operate machine while suspended from lift bail.**

ELECTRIC CONNECTION

⚠ CAUTION

Make sure that the system is suitable for connection to the local input power. Information about the connection voltage and frequency can be found on the identification plate.
The input power must be connected in conformance with the local codes and regulations and can only be installed by well qualified and authorized technicians.

If necessary: change motor from 480V to 208/240V

Default setting of the motor is 480V. Depending on the local input power voltage, the setting could be changed to 208/240V. This concerns both the motor and the transformer.

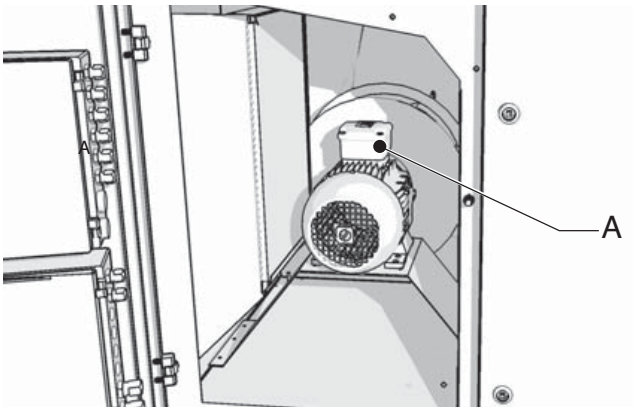
⚠ WARNING

Make sure the downdraft table is disconnected from input power.

To change the motor from 480V to 208/240V, proceed as follows.

1. Open left door.
2. Loosen 4 screws from motor connection block (A) and remove cover. See Figure A.16.
3. Disconnect the 3 phase wires from the motor connection block.

FIGURE A.16 – MOTOR CONNECTION BLOCK



Cable jumpers and wiring diagram necessary to change the motor setting, are supplied in a plastic folder which can be found on the upper right side of the downdraft table.

- Reconfigure the wiring from Δ to Δ Δ in accordance with the wiring diagram.
- Replace cover of motor connection block.

To reconfigure the transformer, proceed as follows. See Figure A.17.

1. Open door to access high voltage electronics. ***See Figure A.2***, item Q.

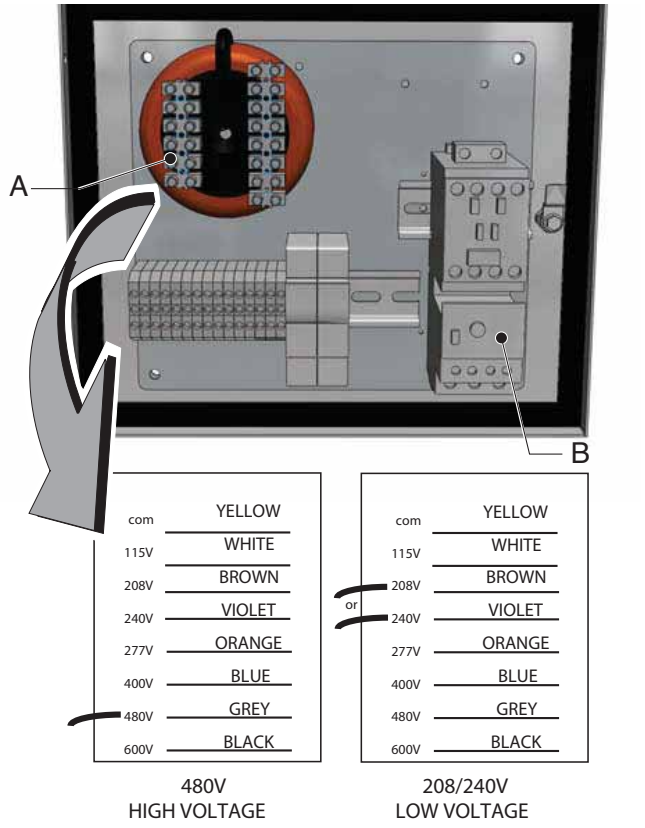
Transformer (A):

2. Disconnect the wire from the primary 480V tap (grey) and reconnect the primary 208V tap (brown) or 240V tap (violet).

Overload relay (B):

3. Adjust overload relay to 10 Amps.
4. Close and lock all doors.

FIGURE A.17 – CHANGE OF TRANSFORMER



CONNECTION TO THE INPUT POWER

To connect the downdraft table to the input power, proceed as follows.

1. Mount a fuse in the local fuse box to which the downdraft table will be connected. Check the electrical diagram for the right type of fuse. Refer to table on next page.

⚠ WARNING

Make sure the downdraft table is disconnected from input power.

	USA		Canada
Electrical Diagram	**208-240V Figure #**	**480V Figure #**	**600V Figure #**
DownFlex 200-M	***Figure F.1***	***Figure F.2***	***Figure F.3***
DownFlex 400-MS	***Figure F.4***	***Figure F.5***	***Figure F.6***
DownFlex 400-MS/A	***Figure F.7***	***Figure F.8***	***Figure F.9***

⚠ WARNING

Be sure to mount the right fuse type.
Plugs/connections to be installed in accordance with the National Electrical Code (NEC) and local requirements.

The downdraft table can by connected to input power by:

• 3ph plug (grounded); or

• Directly to the power supply

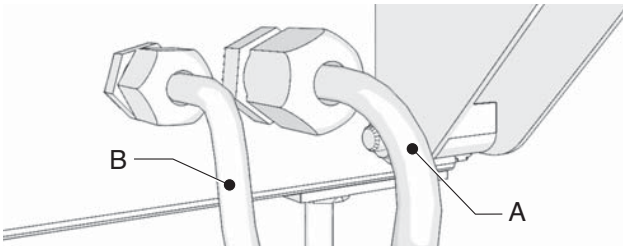
1. Connect the main cord (A) to the input power. See Figure A.18.

The supply cable for the power outlet can be connected to input power by:

• A 1ph plug (grounded); or

• Directly to the power supply

FIGURE A.18 – ELECTRIC CONNECTION



1. Connect the supply cable (B) to the input power. See Figure A.18.

DIRECTION OF ROTATION

Check the direction of rotation of the fan.

1. Turn on the main switch.
2. Push the ON button to switch on the fan.
3. Push the OFF button to switch off the fan.
4. Wait 20 seconds.
5. Open the left door.

⚠ WARNING

Do not open the door within 20 seconds after switching off the fan. Keep your hands away from the fan wheel.

The motor contains a sticker indicating the correct direction of rotation.

1. Check the direction of rotation during the slow-down period of the fan.
2. Turn off the main switch.
3. Disconnect the downdraft table from the input power.
4. If the fan is rotating in the wrong direction change the connection of the phases.

GENERAL DESCRIPTION

The downdraft table is a workbench with an integrated extraction fan and filtration system that is used for welding, grinding and plasma cutting applications. Depending on the specific application, the use of certain accessories is required and/or recommended. See ***Accessories*** section of this manual.

The downdraft table features a work grid, a three-stage prefiltration system for optimum spark arresting and two oval main filter cartridges. Both pre and main filters have dust drawers underneath. The working height of the downdraft table is adjustable. The control panel contains a 120V power outlet for connection of any device, such as a vacuum cleaner or grinding machine (max. 1200W).

DOWNFLEX 200-M

The main filter cartridges of the DownFlex 200-M are disposable. A Magnehelic gauge on the control panel indicates when the filter cartridges need to be replaced.

DOWNFLEX 400-MS

A Magnehelic gauge on the control panel of the DownFlex 400-MS indicates when the automatic filter cleaning system needs to be activated (online cleaning). The filter cartridges are cleaned from the inside by compressed air pulses.

DOWNFLEX 400-MS/A

The filter cleaning system inside the DownFlex 400-MS/A starts automatically each time the fan is switched off (offline cleaning) and also when the pressure drop reaches a certain maximum value during use (online cleaning). The filter cartridges are cleaned from the inside by compressed air pulses. An integrated buzzer indicates when the filter cartridges need to be replaced.

OPERATION

The air containing welding fume, grinding dust or debris from other processes is extracted and filtered, after which the filtered air is recirculated back into the work environment.

The air is extracted through the work grid and the backdraft panel (See ***Accessories*** section of this manual) by the internal extraction fan. The air passes through a prefilter for optimum air distribution. This prefilter is the first spark arresting stage. Next, the air passes through a labyrinth spark trap before it reaches the vertical prefilters in the main filter housing. Finally, the air passes through the main filter cartridges. The air exits the downdraft table through the outlet on the left side.

SAFETY PRECAUTIONS

⚠ WARNING

FUMES AND GASES can be dangerous

Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.

The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV.

⚠ WARNING

Never use the downdraft table without prefilters, main filter cartridges and dust drawers.

⚠ WARNING

Fire hazard! Never use the product for:

- **Filtering flammable, glowing or burning particles or solids or liquids.**
- **Filtering of aggressive fumes (such as hydrochloric acid) or sharp particles.**
- **Sucking cigarettes, cigars, oiled tissues, and other burning particles, objects, and acids.**

⚠ WARNING

Never use the product for:
- **Oxy-fuel cutting.**
- **Arc-air gouging.**
- **Oil mist.**
- **Paint mist.**
- **Heavy oil mist in welding fume.**
- **Extraction of hot gases (more than 45°C/113°F continuously).**
- **Grinding aluminum and magnesium.**
- **Flame spraying.**
- **Extraction of cement, saw dust, wood dust etc.**
- **Explosive environments or explosive substances/ gases.**

⚠ WARNING

In case of welding and plasma cutting, the use of a backdraft kit is required.

- Inspect the product and check it for damage. Verify the functioning of the safety features.
- Check the working environment. Do not allow unauthorized persons to enter the working environment.
- Protect the product against water and humidity.
- Use common sense. Stay alert and keep your attention to your work. Do not use the product when you are under the influence of drugs, alcohol or medicine.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.
- Never install the product in front of entrances and exits which must be used for emergency services.
- Make sure that the workshop in the vicinity of the product, contains sufficient approved fire extinguishers.
- Maintenance should only be performed by authorized, qualified and trained persons (skilled) using appropriate work practices.
- Always wear face mask and gloves during filter exchange / cleaning.

⚠ WARNING

Moving parts (fan) may cause injury. After switching off the fan, wait at least 20 seconds before opening the door(s) to carry out service, maintenance or repair jobs.

- **Industrial vacuum cleaner used during service and maintenance should meet OSHA guidelines for Cr6 housekeeping.**
- **Always use the downdraft table with prefilters, filter cartridges and dust drawers properly installed.**

FILTER REPLACEMENT

FILTER CARTRIDGES AND PREFILTERS

If the filter cartridges and/or prefilters are damaged or saturated, they need to be replaced. To replace the filter cartridges or prefilters, proceed as follows:

⚠ WARNING

- **Always wear face mask and gloves during filter replacement. Other appropriate work clothing may be required to protect workers.**

1. Turn off the main switch and remove the input power.
2. Unpack the replacement filter cartridges and prefilters.
3. Save plastic bag. Wear mask and gloves.
4. Wear mask and gloves.

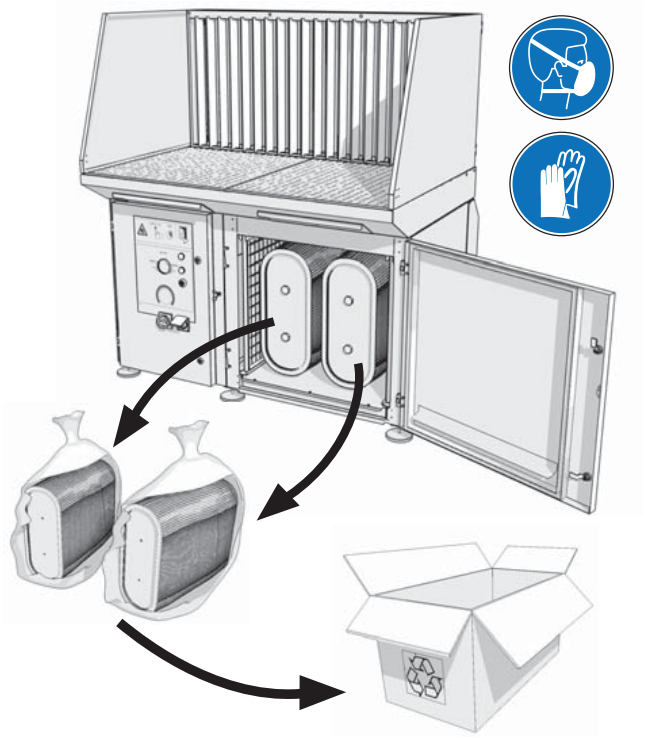
⚠ WARNING

Wait at least 60 seconds before opening the door to allow the dust in the filter compartment to settle.

NOTE: Turn square key to the left to unlock the door.

5. Remove the used filter cartridges and pack them in the plastic bags in which the new filters are supplied. See Figure B.1.
6. Seal the bags firmly with the supplied tie-wrap.
7. Remove the prefilters (both 1st and 2nd stage); ***See Figure A.2***, items I and N.
8. Clean dust trays, work surfaces and prefilters by using an industrial vacuum cleaner (HEPA where required) and wet wiping techniques.
9. If prefilters (1st and/or 2nd stage) are saturated, replace.
10. Seal prefilter bag firmly with supplied tie-wrap.
11. Replace new filter cartridges in unit.
12. Close the door and turn on main switch.
13. Reset PLC (DownFlex 400-MS/A model only)by pushing the ON/OFF button and hold for 20 seconds until the buzzer emits a continuous sound.
14. Dispose of filter cartridges and prefilters in accordance with federal, state and/or local regulations.

FIGURE B.1 – FILTER REPLACEMENT



⚠ CAUTION

DownFlex 400-MS only:

- **Do NOT activate the filter cleaning system during the first 20 operation hours after filter replacement.**

HEPA FILTER (OPTIONAL)

The HEPA filter is supplied in a plastic bag and comes with face mask and a pair of disposable gloves. It should be exchanged together with the main filter cartridges.

⚠ WARNING

- **Always wear face mask and gloves during filter replacement. Other appropriate work clothing may be required to protect workers.**

---

1. Turn off the main switch and remove the input power.
2. Open door of HEPA kit.
3. Unlock the HEPA filter cartridge (***See Figure A.8***, ***item B***).
4. Remove the used filter cartridge and pack it in the plastic bag in which the new filter is supplied.
5. Clean filter housing, using a HEPA industrial vacuum cleaner and wet wiping techniques.
6. Replace new HEPA filter cartridge.
7. Close the door.
8. Dispose of materials in accordance with federal, state and/or local regulations.

DOWNFLEX 200-M (Only)

CONTROL PANEL

The control panel is equipped with the following controls. (See Figure B.2):

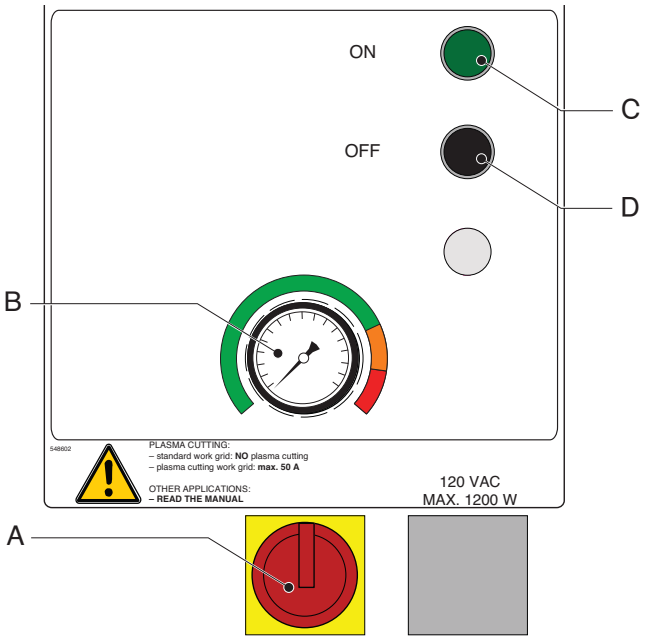
A. Main Switch

B. Magnehelic Gauge

C. ON Button

D. OFF Button

FIGURE B.2 – CONTROL PANEL



OPERATION

1. Turn on the main switch (A). See Figure B.2.
2. Push the ON button (C) to switch on the fan. See Figure B.2.
3. Start welding/grinding.
4. After finishing welding/grinding, push the OFF button (D) to switch off the fan. See Figure B.2.
5. Turn switch (A) off to remove the main input power.

FILTER REPLACEMENT

1. During use, regularly check the Magnehelic gauge (B). When the pressure reaches 0.25 psi (1700 Pa), the filter cartridges need to be replaced. See Figure B.2.
2. Refer to ***Filter Replacement*** for the filter replacement procedure.

DOWNFLEX 400-MS (Only)

CONTROL PANEL

The control panel is equipped with the following controls. (See Figure B.3):

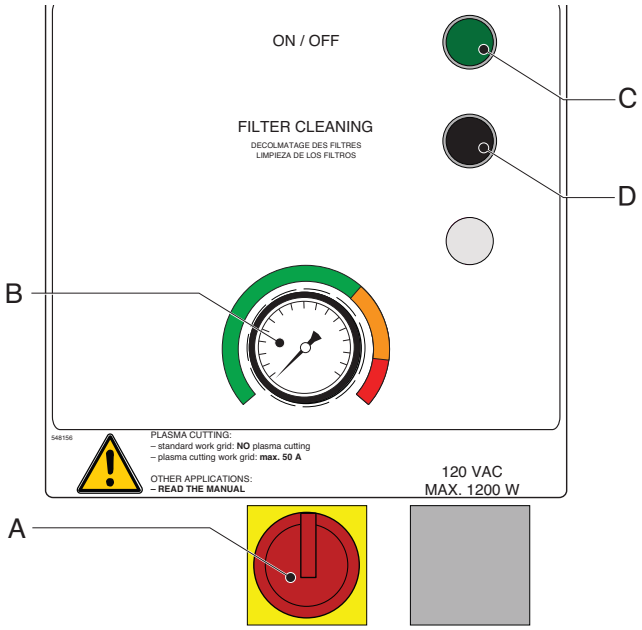
A. Main Switch

B. Magnehelic Gauge

C. ON/OFF Button

D. Button FILTER CLEANING

FIGURE B.3 – CONTROL PANEL



OPERATION

1. Turn on the main switch (A). See Figure B.3.
2. Push the ON/OFF button (C) to switch on the fan. See Figure B.3.
3. Start welding/grinding.
4. After finishing welding/grinding, push the ON/OFF button (C) to switch off the fan. See Figure B.3.
5. Turn switch (A) off to remove the main input power.

FILTER CLEANING

1. During use, regularly check the Magnehelic gauge (B). When the pressure reaches 0.22 psi (1500 Pa), the filter cartridges need to be cleaned. See Figure B.3.

Filter cleaning procedure:

The filter cleaning procedure takes place online.

1. Make sure the downdraft table is switched on.
2. Press button FILTER CLEANING (D) for 5 seconds to activate the filter cleaning system. See Figure B.3.

The filter cleaning procedure takes 2 minutes, during which each filter cartridge is cleaned by 7 compressed air pulses.

NOTE: To secure optimum filter efficiency, do not activate the filter cleaning system within the first 20 hours of operation or within 20 hours after filter replacement.

1. Check the pressure on the Magnehelic gauge (B). If the pressure still exceeds 0.22 psi (1500 Pa), repeat the filter cleaning procedure (max. 5 times). See Figure B.3.

FILTER REPLACEMENT

If the filter cleaning system is unable to get the pressure below 0.22 psi (1500 Pa) after 5 attempts, the filter cartridges are probably saturated and need to be replaced.

1. Push the ON/OFF button (C) to switch off the fan. See Figure B.3.
2. Wait 20 seconds for fan to stop rotating.
3. Turn switch (A) off to remove the main input power.
4. Refer to ***Filter Replacement*** for the filter replacement procedure.

DOWNFLEX 400-MS/A (Only)

CONTROL PANEL

The control panel is equipped with the following controls. (See Figure B.4):

A. Main Switch

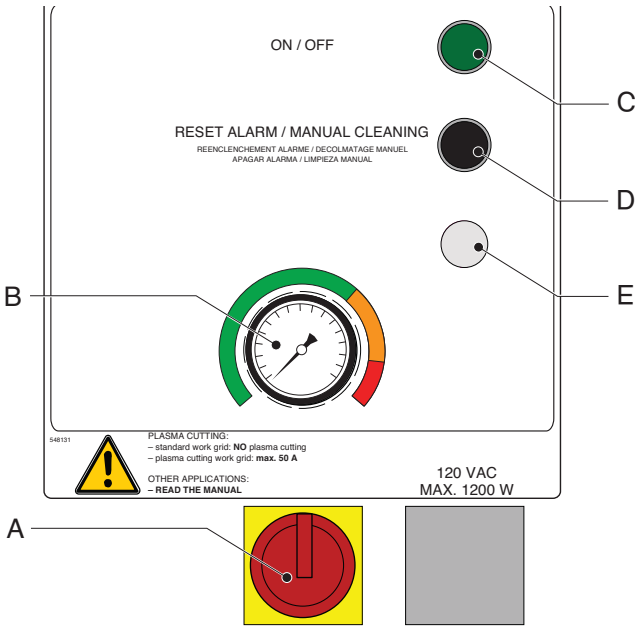
B. Magnehelic Gauge

C. ON/OFF Button

D. Button RESET ALARM/MANUAL CLEANING

E. Buzzer

FIGURE B.4 – CONTROL PANEL



OPERATION

1. Turn on the main switch (A). See Figure B.4.
2. Wait 10 seconds so PLC can start up.

Without movement sensor and welding cable sensor:	With movement sensor:	With welding cable sensor: (for welding only):
• Push the ON/OFF button (C) to switch on the fan. • Start welding / grinding. • After finishing welding / grinding, push the ON / OFF button (C) to switch off the fan.	• Start welding / grinding. The fan will start and stop automatically.	• Apply the clamp of the welding cable sensor to the ground cable of the welding machine. • Start welding. The fan will start and stop automatically.

AUTOMATIC FILTER CLEANING

Each time the downdraft table is switched off, the filter cartridges are automatically cleaned by a full cleaning cycle. This procedure takes approximately 7 minutes, during which each filter cartridge is cleaned by max. 10 compressed air blasts.

NOTE: To secure optimum filter efficiency the filter cleaning system will not be activated during the first 20 hours of operation or within 20 hours after filter replacement.

MANUAL FILTER CLEANING

If desired, the filter cleaning system can be activated manually (online cleaning only).

1. Push the ON/OFF button (C) to switch on the fan. See Figure B.4.
2. Press button RESET ALARM/MANUAL CLEANING (D) during 5 seconds to activate the filter cleaning system. See Figure B.4.

This procedure takes approximately 4 minutes, during which each filter cartridge is cleaned by 6 compressed air blasts.

NOTE: To secure optimum filter efficiency the filter cleaning system cannot be activated during the first 20 hours of operation or within 20 hours after filter replacement.

BUZZER

The buzzer may emit two different interrupted sounds:

• 2 Seconds on - 2 seconds off: clogged filter

• 2 Seconds on - 5 seconds off: compressed air missing

When the pressure over the filter cartridges reaches 0.22 psi (1500 Pa) during use, the buzzer will emit an interrupted sound (2 seconds on - 2 seconds off). In this case proceed as follows.

1. Press button RESET ALARM/MANUAL CLEANING (D) to deactivate the buzzer. See Figure B.4.
2. Push the ON/OFF button (C) to switch off the fan. See Figure B.4.

After the fan has been switched off, the automatic filter cleaning procedure will be activated. See Automatic Filter Cleaning.

NOTE: Buzzer sound is suppressed during one hour enabling the user to finish his job. If necessary/desired, buzzer can be suppressed (repeatedly), provided that the downdraft table is switched off by ON/OFF button at the end of the day.

NOTE: When welding/grinding and cleaning is finished turn switch (A) off to remove the main input power.

FILTER REPLACEMENT

When the filter cleaning system is unable to get the pressure below 0.22 psi (1500 Pa) after 5 attempts, the filter cartridges are probably saturated and need to be replaced. This is indicated by the buzzer emitting an interrupted sound (2 seconds on - 2 seconds off).

1. Press button RESET ALARM/MANUAL CLEANING (D) to deactivate the buzzer (E). See Figure B.4.
2. Push the ON/OFF button (C) to switch off the fan. See Figure B.4.
3. Wait 20 seconds for fan to stop rotating.
4. Refer to ***Filter Replacement*** for the filter replacement procedure.

OPTIONS / ACCESSORIES

The following products can be obtained as an option and/or accessory:

⚠ CAUTION

USA ONLY:

Backdraft kit and side panels are standard equipment.

CANADA ONLY:

Downdraft table can be ordered with separate backdraft kit and side panels or as standard equipment.

A. Back Panel

The back panel consists of a sheet metal plate to be mounted on the downdraft table. The back panel functions as a deflector plate for grinding applications. It also prevents tools, metal and other parts from falling behind the downdraft table.

B. Backdraft Kit (required for all welding applications and recommended for grinding applications)

The backdraft kit consists of narrowing plates to be mounted underneath the work grid and a backdraft panel with vertical lamellas. The backdraft kit is required for all welding and plasma cutting applications and recommended for grinding applications. By using the backdraft kit, the downdraft extraction capacity is reduced to approx. 20%. The remaining 80% is extracted through the backdraft panel.

C. Side Panels

The side panels consist of hinged trapezium-shaped sheet metal plates and have to be used in combination with the backdraft kit or back panel. They are to be mounted on the sides of the downdraft table. Side panels improve the extraction effectiveness by reducing the influences of draft. They also prevent tools, metal and other parts from falling off the downdraft table. Side panels are hinged to accommodate large workpieces.

D. Plasma Cutting Work Grid (required for plasma cutting applications)

Specially constructed work grid suitable for plasma cutting, including additional perforated steel spark arresters. The plasma cutting work grid is required for plasma cutting applications (max. 50 A). The additional perforated steel spark arresters protect the prefilters already present.

⚠ CAUTION

Current of plasma cutting machine should NOT exceed 50 Amps.

E. HEPA Kit

Consists of a filter housing with a HEPA filter to be mounted on the outlet of the downdraft table.

F. Silencer/Outlet Duct

Consists of a rectangular sheet metal shaft to be mounted on the outlet of the downdraft table or on the HEPA kit. The Silencer/Outlet duct is to be used as a silencer and prevents dust from blowing up from the floor at the same time. In case the Silencer/Outlet duct is used in a welding cabin, it also prevents air turbulence in the cabin and air disturbance to any adjacent cabin.

G. Outlet Connection Plate

Outlet plate for duct connection of downdraft table. The outlet connection plate is to be mounted at the outlet of the downdraft table instead of the outlet panel. Suitable for mounting of a flange Ø 12 inch or Ø 315 mm for hose or duct connection; flange to be sourced locally.

H. Working Light

Lighting fixture with 18W fluorescent light to be mounted to the back panel or backdraft panel. The working light provides a clear view to the workpiece. The cover can be hinged to facilitate exchange of the fluorescent light. The working light is activated upon turning on the main switch of the downdraft table.

I. Movement Sensor (DownFlex 400-MS/A only)

Automatic start/stop based on movement sensor, to be mounted on top of the back panel or backdraft panel. After detecting any movement above the work grid, the automatic start/stop device activates the fan to start running.

Start delay: 2 seconds. Stop delay: 60 seconds.

J. Welding Cable Sensor (DownFlex 400-MS/A only)

Metal clamp with built-in sensor that works as an automatic start/stop device. The clamp is to be connected to the ground cable of the welding machine. Suitable for welding applications only. The welding cable sensor operates on the basis of a change in the magnetic field of the ground cable of a welding machine. When welding starts, the welding cable sensor detects a signal, as a result, the fan starts running automatically.

Start delay: 2 seconds. Stop delay: 60 seconds.

K. Bench Vice Mounting Bracket

To be connected to the standard work grid of the downdraft table (bench vice not included). Mounting bracket to mount various types of bench vices. Only suitable for standard work grid. ***See Figure A.13***.

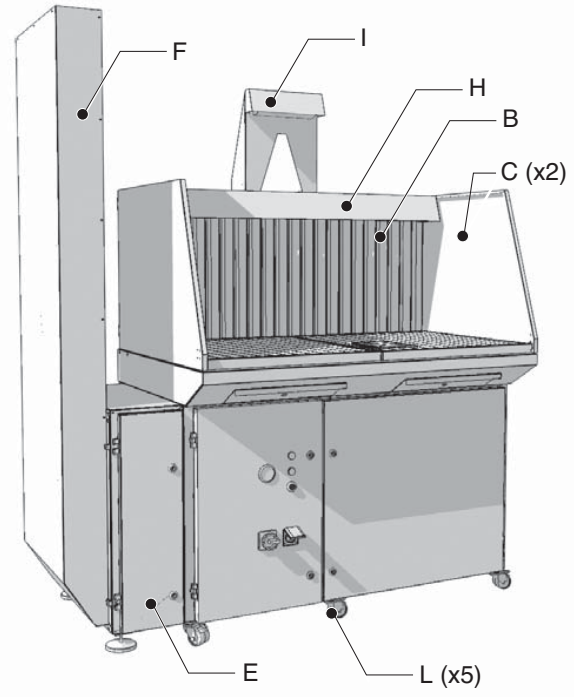
L. Wheel Kit

Consists of five swivel castors, two of which are equipped with brakes. These castors are to be mounted underneath the downdraft table. Wheel kit is to facilitate internal transport of the downdraft table. See ***Wheel Kit*** in ***Installation*** section of this manual.

M. Dust Tray Lid

Lid to cover the dust drawer underneath the main filter cartridges. Comes with a plastic bag, a face mask, and a pair of disposable gloves. When the dust drawer underneath the main filter cartridges needs to be emptied, the plastic bag and the personal protection equipment enable dust free removal.

FIGURE C.1 – OPTIONS



SAFETY PRECAUTIONS

⚠ WARNING

Have qualified personnel do the maintenance work. Turn the engine off before working inside the machine. In some cases, it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

Do not put your hands near the cooling blower fan. If a problem cannot be corrected by following the instructions, take the machine to the nearest Lincoln Field Service Facility.

ELECTRIC SHOCK can kill.
- **Do not touch electrically live parts or electrode with skin or wet clothing.**
- **Insulate yourself from work and ground.**
- **Always wear dry insulating gloves.**

ENGINE EXHAUST can kill.
- **Use in open, well ventilated areas or vent exhaust outside.**

MOVING PARTS can injure.
- **Do not operate with doors open or guards off.**
- **Disconnect power before servicing.**
- **Keep away from moving parts.**

See additional warning information throughout this operator's manual and the Engine manual as well.

MAINTENANCE

The product has been designed to be reliable for extended periods of time with reasonable maintenance. In order to guarantee optimal performance level, regular maintenance and cleaning activities are required which are described in this section. If you observe the necessary safety precautions and carry out the maintenance at regular intervals, any problems occurring will be detected and corrected before they lead to a total breakdown.

The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore, it is recommended to thoroughly inspect the complete product once every year in addition to the indicated periodic maintenance.

⚠ WARNING

Improper maintenance can cause fire. Always maintain the product according to the instructions of this manual.

⚠ WARNING

Always switch OFF the system and disconnect the compressed air (if applicable) before carrying out the instructions below. First read the maintenance instructions at the beginning of this manual.

SERVICE, MAINTENANCE AND REPAIRS

- Observe the maintenance intervals given in this manual. Overdue maintenance can lead to high costs for repair and revisions and can render the guarantee null and void.
- Always use tools, materials, lubricants and service techniques which have been approved by the manufacturer. Never use worn tools and do not leave any tools in or on the product.
- Safety features which have been removed for service, maintenance or repairs, must be put back immediately after servicing and that they still function properly.

DOWNFLEX 200-M

The main filter cartridges of the DownFlex 200-M are disposable.

DOWNFLEX 400-MS

The main filter cartridges in the DownFlex 400-MS are self cleaning by means of a manually controlled compressed air system.

DOWNFLEX 400-MS/A

The main filter cartridges in the DownFlex 400-MS/A are self cleaning by means of an automatically controlled compressed air system.

PERIODIC MAINTENANCE

The maintenance activities in the table below are strictly reserved for well trained and authorized service engineers.

TABLE D.1 – MAINTENANCE SCHEDULES

COMPONENT	ACTION	FREQUENCY		
		Every Week	Every 2 Weeks	Every 12 Months
Prefilters (1st stage)	Check for damage and correct installation. Replace if necessary.	X		
	Clean prefilters using an industrial vacuum cleaner.		X	
Prefilters (2nd stage)	Check for damage and correct installation. Replace if necessary.	X		
	Clean prefilters using an industrial vacuum cleaner.		X	
Filter Cartridges	Check for damage and correct installation. Replace if necessary.	X		
Dust drawers	Check for damage and correct installation. Replace if necessary.	X		
	Empty the dust drawer underneath the main filter cartridges, preferably by using an industrial vacuum cleaner.		X	
Doors	Check for damage and correct installation. Replace if necessary.	X		
Outlet grid	Clean the outlet grid using an industrial vacuum cleaner.			X
Plasma work grid	*Check for damage. Replace damaged bars if necessary.*	X		
Perforated steel spark arresters (underneath plasma work grid)	*Check for damage and correct installation. Replace if necessary.*	X		

* Text printed in italics refers to options and accessories.

DISPOSAL

After life of the product, dispose it of in accordance with state or local regulations.

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).
Look under the column labeled “PROBLEM (SYMPTOMS)”. This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.
The second column labeled “POSSIBLE CAUSE” lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION
This column provides a course of action for the Possible Cause, generally it states to contact your local Lincoln Authorized Field Service Facility.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Lincoln Authorized Field Service Facility.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

TROUBLESHOOTING

E-2

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
GENERAL		
Fan does not start running. Downdraft table does not function.	1. No power supply.	1. Check power supply.
	2. Main switch off.	2. Turn on main switch.
	3. Motor defective.	3. Repair or replace motor.
	4. ON/OFF button defective.	4. Replace ON/OFF button.
	5. Fuse(s) defective	5. Check fuses F1, F2 and F3. Replace if necessary.
	6. Overload relay tripped.	6. Check current settings and reset overload relay.
	7. Overload relay defective.	7. Replace overload relay.
	8. Left and/or right door open.	8. Close and lock both doors.
	9. Safety switch in left and/or right door defective.	9. Replace safety switch(es).
Poor extraction capacity. Downdraft table does not function properly.	1. Filter cartridges saturated.	1. Replace both filter cartridges (*__See Filter Cartridges and Prefilters__). 2. Replace HEPA filter cartridge. (*__See HEPA Filter__).
	1. Magnehelic gauge defective (indicates value below 800 Pa).	1. Replace Magnehelic gauge and filter cartridges (*__See Filter Cartridges and Prefilters__). 2. Replace HEPA filter cartridge. (*__See HEPA Filter__).
	1. Sense of rotation of motor incorrect.	1. Invert connection of phases
	1. Prefilter (1st and/or 2nd stage) polluted.	1. Clean prefilters.
Dust or smoke coming out of the outlet. Pollution of the facility.	1. Filter cartridge(s) torn.	1. Replace both filter cartridges (*__See Filter Cartridges and Prefilters__) and clean the outlet grid. 2. Replace HEPA filter cartridge. (*__See HEPA Filter__).
Working light not lit. No light.	**1. Main switch off.**	**1. *Turn on main switch.**
	2. Cable is not connected.	**2. *Connect cable** (*__See Figure A.11__, item B).
	3. Fluorescent light is defective.	**3. *Replace fluorescent light.**
	4. Fuse is defective.	**4. *Check fuse F4 and replace if necessary.**

* Text printed in **Bold** refers to options and accessories.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
GENERAL		
MANUAL CLEANING button does not work. No filter cleaning.	1. Button was not pushed/held long enough.	1. Push/hold button for 5 seconds.
	2. Less than 20 operation hours after downdraft table came into use.	2. Try again later. Is not necessary to clean the filter cartridges.
	3. Less than 20 operation hours after filter replacement/reset.	3. Try again later. Is not necessary to clean the filter cartridges.
Buzzer emits an interrupted sound (2 seconds on - 2 seconds off). Filter cartridges polluted.	1. Pressure over the filter cartridges has reached 0.22 psi (1500 Pa.).	1. Push button RESET ALARM/MANUAL CLEANING to suppress buzzer. Push/hold the same button for 5 seconds to activate the filter cleaning system.
Buzzer emits an interrupted sound (2 seconds on - 5 seconds off). Filter cleaning system does not function.	1. No compressed air available.	1 Connect/repair compressed air supply.
Buzzer keeps emitting sound after filter replacement. Operation hour counter does not start at 0 after filter replacement.	1. PLC has not been reset.	1. Reset PLC (***See Filter Replacement**).

* Text printed in **Bold** refers to options and accessories.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed throughout this manual

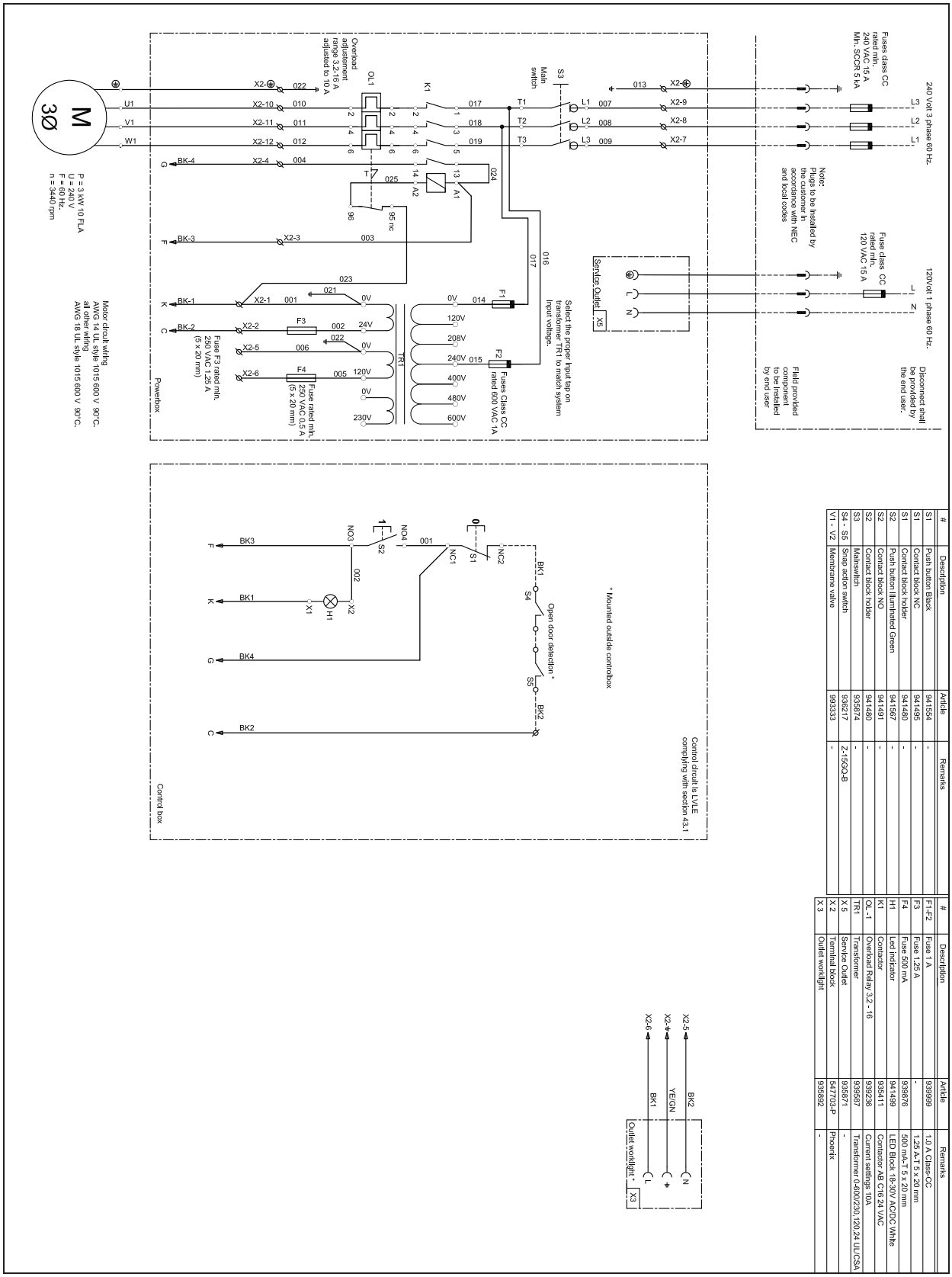
PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
DOWNFLEX 400-MS-ONLY		
Irregular filter cleaning. One of the filter cartridges is not being cleaned.	1. One of the membrane valves is defective.	1. Replace both membrane valves.
Poor extraction capacity. No filter cleaning.	1. Membrane valve(s) defective.	1. Replace both membrane valves.
	2. ***Cleaning Button defective**.	2. Replace button.
	3. No compressed air supply.	3. Repair compressed air supply.
DOWNFLEX 400-MS/A ONLY		
Fan does not start running. Downdraft table does not function.	1. PLC has not started up.	1. Wait 10 seconds after turning on the main switch and try again.
	2. No compressed air available.	2. Connect/repair compressed air supply.
	3. *Automatic start/stop (movement sensor or welding cable sensor) not connected.	***3.* *Connect cable of automatic start / stop (*See Figure A.11, item A).**
	4. *Movement sensor is defective.	**4. *Replace sensor.**
	5. *Welding cable sensor not connected.	**5. *Connect clamp of welding cable sensor to ground cable of welding machine.**
Irregular filter cleaning. One of the filter cartridges is not being cleaned.	1. One of the membrane valves defective.	1. Replace both membrane valves.
Poor extraction capacity. No filter cleaning.	1. Membrane valve(s) defective.	1. Replace both membrane valves.
	2. PLC defective.	2. Replace PLC.
	3. Button RESET ALARM/MANUAL CLEANING defective.	3. Replace button RESET ALARM/MANUAL CLEANING.

* Text printed in **Bold** refers to options and accessories.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

FIGURE F.1 – 548677 DOWNFLEX 200-M (208-240V/3~/60HZ) (USA)

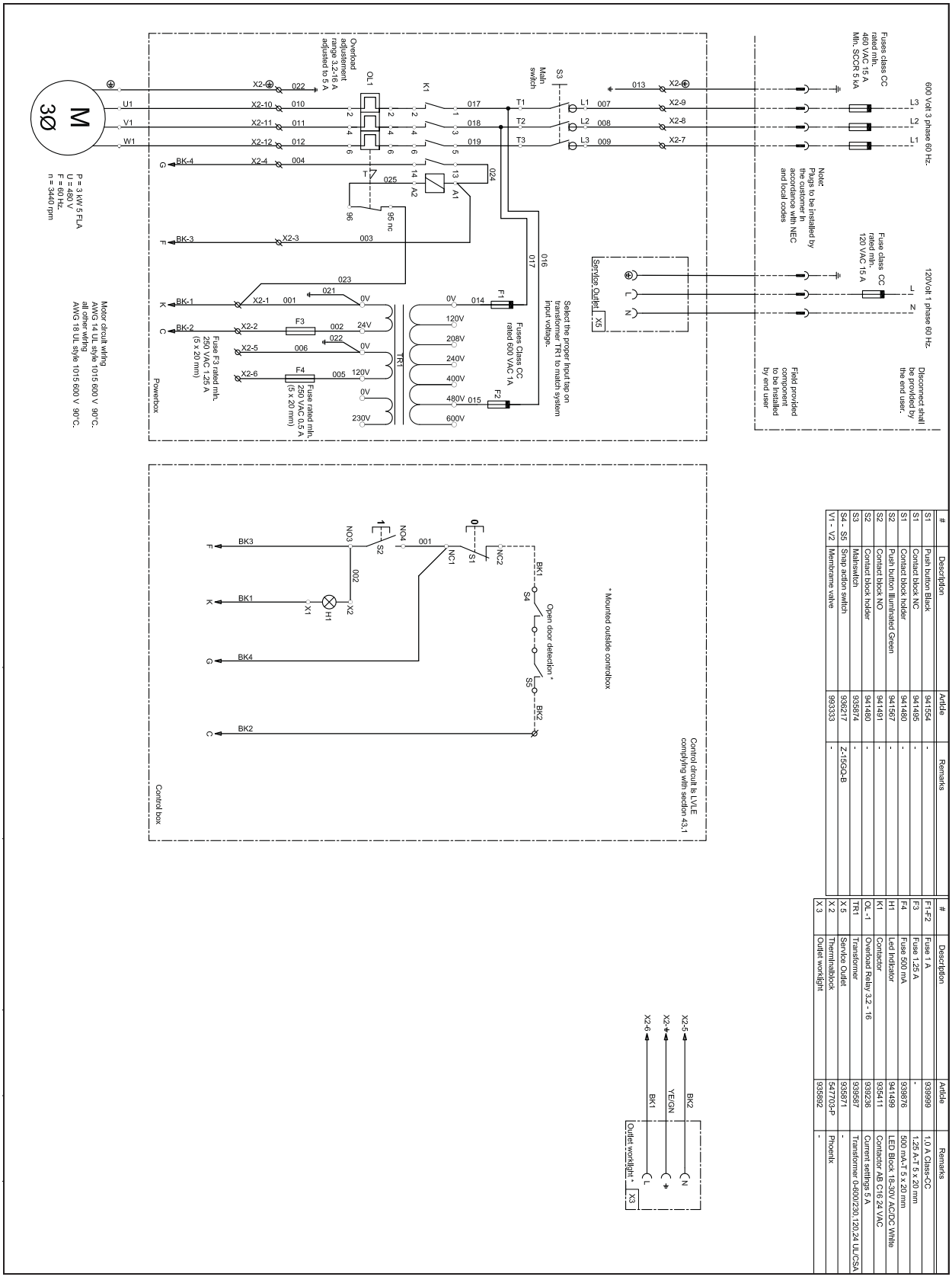

240 Volt 3 phase 60 Hz.
120Volt 1 phase 60 Hz.
Fuses class CC rated min. 240 VAC 15 A Min. SCCR 5 kA
Fuse class CC rated min. 120 VAC 15 A
Disconnect shall be provided by the end user.
Note: Plugs to be installed by the customer in accordance with NEC and local codes
Field provided component to be installed by end user
Service Outlet X5
Overload adjustement range 3,2 - 16 A adjusted to 10 A
Main switch
Powerbox
Select the proper input tap on transformer TR1 to match system input voltage.
Fuses Class CC rated 600 VAC 1A
Fuse F3 rated min. 250 VAC 1.25 A (5 x 20 mm)
Fuse rated min. 250 VAC 0.5 A (5 x 20 mm)
P = 3 kW 10 FLA
U = 240 V
F = 60 Hz.
n = 3440 rpm
Motor circuit wiring AWG 14 UL style 1015 600 V 90°C. all other wiring AWG 18 UL style 1015 600 V 90°C.
Control box
Control circuit is LVLE complying with section 43.1
* Mounted outside controbox
Open door detection *
Outlet worklight *

#	Description	Article	Remarks
S1	Push button Black	941554	-
S1	Contact block NC	941495	-
S1	Contact block holder	941480	-
S2	Push button Illuminated Green	941567	-
S2	Contact block NO	941491	-
S2	Contact block holder	941480	-
S3	Mailswitch	935874	-
S4 - S5	Snap action switch	936217	Z-15GQ-B
V1 - V2	Membrame valve	993333	-

#	Description	Article	Remarks
F1-F2	Fuse 1 A	939999	1,0 A Class-CC
F3	Fuse 1,25 A	-	1,25 A-T 5 x 20 mm
F4	Fuse 500 mA	939876	500 mA-T 5 x 20 mm
H1	Led indicator	941499	LED Block 18-30V AC/DC White
K1	Contactor	935411	Contactor AB C16 24 VAC
OL -1	Overload Relay 3,2 - 16	939236	Current settings 10A
TR1	Transformer	939987	Transformer 0-400/230\120,24 ULCSA
X 5	Service Outlet	935871	-
X 2	Terminal block	547703-P	Phoenix
X 3	Outlet worklight	935682	-

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

FIGURE F.2 – 548677 DOWNFLEX 200-M (480V/3~/60HZ) (USA)

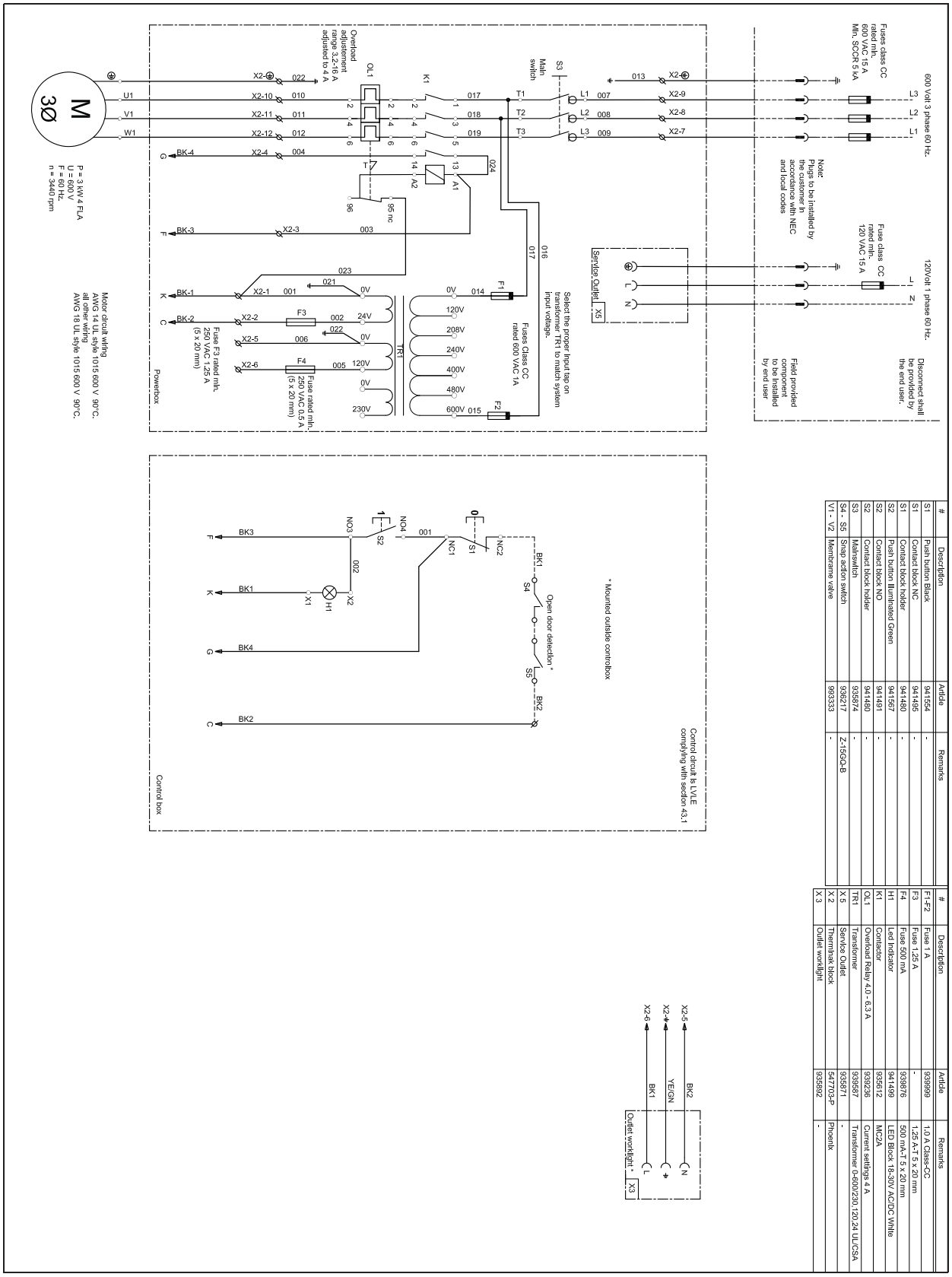

600 Volt 3 phase 60 Hz.
120Volt 1 phase 60 Hz.
Fuses class CC rated min. 460 VAC 15 A Min. SCCR 5 kA
Fuse class CC rated min. 120 VAC 15 A
Note: Plugs to be installed by the customer in accordance with NEC and local codes
Disconnect shall be provided by the end user.
Field provided component to be installed by end user
Service Outlet X5
Overload adjustement range 3,2 - 16 A adjusted to 5 A
Main switch
Fuses Class CC rated 600 VAC 1A
Select the proper input tap on transformer TR1 to match system input voltage.
Fuse F3 rated min. 250 VAC 1,25 A (5 x 20 mm)
Fuse rated min. 250 VAC 0,5 A (5 x 20 mm)
Powerbox
Motor circuit wiring AWG 14 UL style 1015 600 V 90°C. all other wiring AWG 18 UL style 1015 600 V 90°C.
P = 3 kW 5 FLA U = 480 V F = 60 Hz. n = 3440 rpm
Control box
Control circuit is LVLE complying with section 43.1
* Mounted outside controbox
Open door detection *
Outlet worklight * X3

#	Description	Article	Remarks
S1	Push button Black	941554	-
S1	Contact block NC	941495	-
S1	Contact block holder	941480	-
S2	Push button Illuminated Green	941567	-
S2	Contact block NO	941491	-
S2	Contact block holder	941480	-
S3	Mainswitch	935874	-
S4 - S5	Snap action switch	936217	Z-15GQ-B
V1 - V2	Membrame valve	983333	-

#	Description	Article	Remarks
F1-F2	Fuse 1 A	939999	1,0 A Class-CC
F3	Fuse 1,25 A	-	1,25 A-T 5 x 20 mm
F4	Fuse 500 mA	939876	500 mA-T 5 x 20 mm
H1	Led Indicator	941499	LED Block 18-30V AC/DC White
K1	Contactor	935411	Contactor AB C16 24 VAC
OL -1	Overload Relay 3,2 - 16	939236	Current settings 5 A
TR1	Transformer	939587	Transformer U-400/230,120,24 UL/CSA
X 5	Service Outlet	935871	-
X 2	Therminalblock	547703-P	Phoenix
X 3	Outlet worklight	935892	-

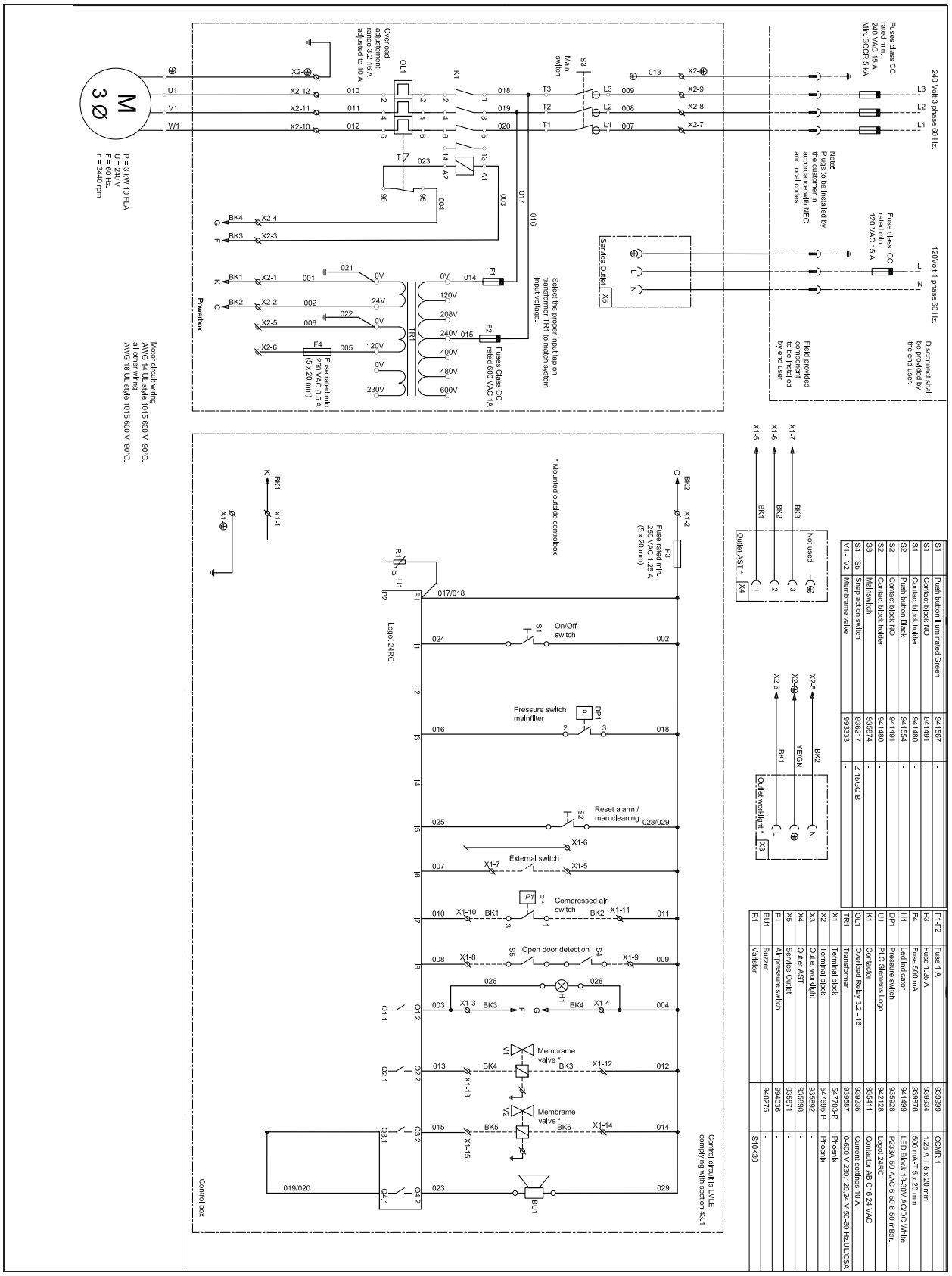
NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

FIGURE F.3 – 548677 DOWNFLEX 200-M (600V/3~/60HZ) (CANADA)


600 Volt 3 phase 60 Hz.
120Volt 1 phase 60 Hz.
Fuses class CC rated min. 600 VAC 15 A Min. SCCR 5 kA
Fuse class CC rated min. 120 VAC 15 A
Disconnect shall be provided by the end user.
Note: Plugs to be installed by the customer in accordance with NEC and local codes
Field provided component to be installed by end user
Service Outlet X5
Overload adjustement range 3,2 - 4,0 A adjusted to 4 A
Main switch
Powerbox
Fuse F3 rated min. 250 VAC 1,25 A (5 x 20 mm)
Fuse rated min. 250 VAC 0,5 A (5 x 20 mm)
Fuses Class CC rated 600 VAC 1A
Select the proper Input tap on transformer TR1 to match system input voltage.
P = 3 kW-4 FLA
U = 600 V
F = 60 Hz.
n = 3440 rpm
Motor circuit wiring
AWG 14 UL style 1015 600 V 90°C.
all other wiring
AWG 18 UL style 1015 600 V 90°C.
Control box
Control circuit is LVLE complying with section 43.1
* Mounted outside controbox
Open door detection *
Outlet worklight * X3
Description
Article
Remarks
S1 Push button Black 941554 -
S1 Contact block NC 941495 -
S1 Contact block holder 941480 -
S2 Push button Illuminated Green 941567 -
S2 Contact block NO 941491 -
S2 Contact block holder 941480 -
S3 Mainswitch 935874 -
S4 - S5 Snap action switch 936217 Z-15GQ-B
V1 - V2 Membrane valve 983333 -
F1-F2 Fuse 1 A 939999 1,0 A Class-CC
F3 Fuse 1,25 A - 1,25 A-T 5 x 20 mm
F4 Fuse 500 mA 939876 500 mA-T 5 x 20 mm
H1 Led Indicator 941499 LED Block 18-30V AC/DC White
K1 Contactor 935612 MC2A
OL1 Overload Relay 4,0 - 6,3 A 939236 Current settings 4 A
TR1 Transformer 939587 Transformer (-400/230;120;24 ULCSA
X1,5 Service Outlet 935871 -
X2 Thermiak block 547703-P Phoenix
X3 Outlet worklight 935892 -

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

FIGURE F.4 – 548651 DOWNFLEX 400-MS (208-240V/3~/60HZ) (USA)


240 Volt 3 phase 60 Hz.
120Volt 1 phase 60 Hz.
Fuses class CC rated min. 240 VAC 15 A Min. SCCR 5 kA
Fuse class CC rated min. 120 VAC 15 A
Note: Plugs to be installed by the customer in accordance with NEC and local codes
Disconnect shall be provided by the end user.
Field provided component to be installed by end user
Service Outlet X5
Main switch S3
Overload adjustement range 3,2-16 A adjusted to 10 A
OL1
K1
M 3 Ø
P = 3 kW 10 FLA
U = 240 V
F = 60 Hz.
n = 3440 rpm
Powerbox
TR1
Select the proper input tap on transformer TR1 to match system input voltage.
Fuses Class CC rated 600 VAC 1A
Fuse rated min. 250 VAC 0,5 A (5 x 20 mm)
Motor circuit wiring AWG 14 UL style 1015 600 V 90°C. all other wiring AWG 18 UL style 1015 600 V 90°C.
* Mounted outside controlbox
Fuse rated min. 250 VAC 1,25 A (5 x 20 mm)
Logo! 24RC
On/Off switch
Pressure switch main/filter
Reset alarm / man.cleaning
External switch
Compressed air switch
Open door detection
Membrame valve *
Membrame valve *
Outlet AST *
Not used
Outlet worklight *
Control box
Control circuit is LVLE complying with section 4.3.1

S1	Push button Illuminated Green	941567	-		
S1	Contact block NO	941491	-		
S1	Contact block holder	941490	-		
S1	Push button Black	941554	-		
S2	Contact block NO	941491	-		
S2	Contact block holder	941480	-		
S3	Mainswitch	935874	-		
S4 - S5	Snap action switch	938217	Z-15GQ-B		
V1 - V2	Membrame valve	993333	-		

F1-F2	Fuse 1 A	939909	CCMR 1		
F3	Fuse 1,25 A	939934	1,25 A-T 5 x 20 mm		
F4	Fuse 500 mA	939876	500 mA-T 5 x 20 mm		
H1	Led Indicator	941499	LED Block 18-30V AC/DC White		
DP1	Pressure switch	935928	P233A-50-AAC 6-50 6-50 mBar.		
U1	PLC Siemens Logo	942128	Logo! 24RC		
K1	Contactor	935411	Contactor AB C16 24 VAC		
OL1	Overload Relay 3,2 - 16	939236	Current setting 10 A		
TR1	Transformer	939587	0-600 V 230 120 24 V 50-60 Hz.UL/CSA		
X1	Terminal block	547703-P	Phoenix		
X2	Terminal block	547695-P	Phoenix		
X3	Outlet worklight	935892	-		
X4	Outlet AST	935898	-		
X5	Service Outlet	935871	-		
P1	Air pressure switch	994036	-		
BU1	Buzzer	942275	-		
R1	Varistor	-	S10K30		

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

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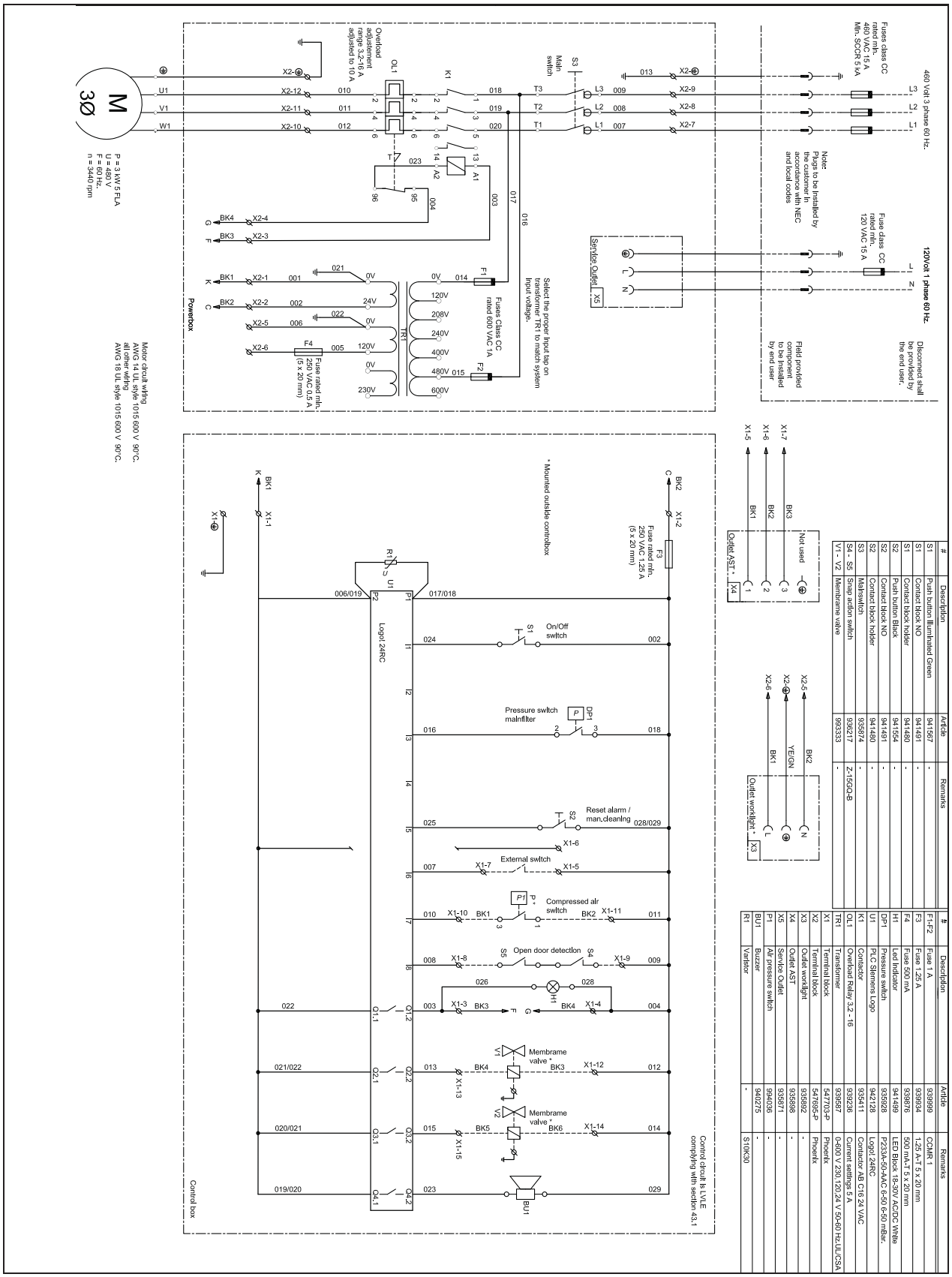
FIGURE F.5 – 548651 DOWNFLEX 400-MS (480V/3~/60HZ) (USA)

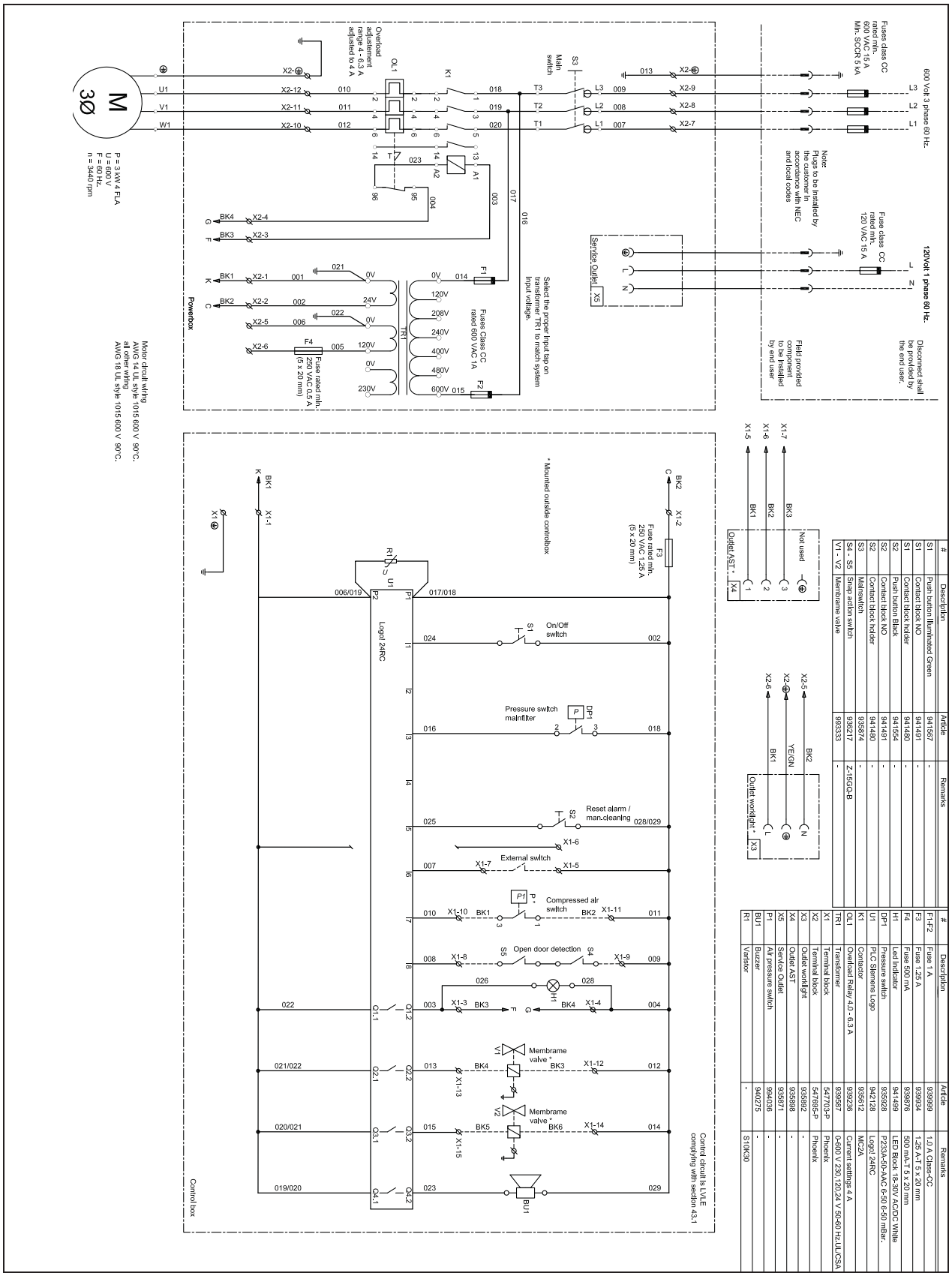

M
3Ø
P = 3 kW 5 FLA
U = 480 V
F = 60 Hz.
n = 3440 rpm
Motor circuit wiring
AWG 14 UL style 1015 600 V 90°C.
all other wiring
AWG 18 UL style 1015 600 V 90°C.
Overload adjustement range 3,2-16 A adjusted to 10 A
Main switch
Fuses class CC rated min. 480 VAC 15 A Min. SCCR 5 kA
460 Volt 3 phase 60 Hz.
Note: Plugs to be installed by the customer in accordance with NEC and local codes
Fuse class CC rated min. 120 VAC 15 A
120Volt 1 phase 60 Hz.
Disconnect shall be provided by the end user.
Field provided component to be installed by end user
Service Outlet
Powerbox
Fuse rated min. 250 VAC 0,5 A (5 x 20 mm)
Fuses Class CC rated 600 VAC 1A
Select the proper input tap on transformer TR1 to match system input voltage.
Control box
* Mounted outside controlbox
Fuse rated min. 250 VAC 1,25 A (5 x 20 mm)
Logo! 24RC
On/Off switch
Pressure switch mainfilter
Reset alarm / man.cleaning
External switch
Compressed air switch
Open door detection
Membrame valve *
Membrame valve *
Control circuit lx LVE complying with section 43.1
Not used
Outlet AST *
Outlet worklight *
YE/GN

#	Description	Article	Remarks
S1	Push button Illuminated Green	941567	-
S1	Contact block NO	941491	-
S1	Contact block holder	941480	-
S2	Push button Black	941554	-
S2	Contact block NO	941491	-
S2	Contact block holder	941480	-
S3	Mainswitch	935874	-
S4 - S5	Snap action switch	938217	Z-15GQ-B
V1 - V2	Membrame valve	993333	-

#	Description	Article	Remarks
F1-F2	Fuse 1 A	939999	CC/MR 1
F3	Fuse 1,25 A	939934	1,25 A-T 5 x 20 mm
F4	Fuse 500 mA	939876	500 mA-T 5 x 20 mm
H1	Led Indicator	941499	LED Blink 18-30V AC/DC White
DP1	Pressure switch	935928	P233A-50-AAC 6-50 6-50 mBar.
U1	PLC Siemens Logo	942128	Logo! 24RC
K1	Contactor	935411	Contactor AB C16 24 VAC
OL1	Overload Relay 3,2 - 16	939236	Current settings 5 A
TR1	Transformer	939587	0-400 V 200 120,24 V 50-60 Hz.UL/CSA
X1	Terminal block	947703-P	Phoenix
X2	Terminal block	947695-P	Phoenix
X3	Outlet worklight	935892	-
X4	Outlet AST	935898	-
X5	Service Outlet	935871	-
P1	Air pressure switch	994036	-
BU1	Buzzer	940275	-
R1	Varistor	-	S10K30

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

FIGURE F.6 – 548651 DOWNFLEX 400-MS (600V/3~/60HZ) (CANADA)

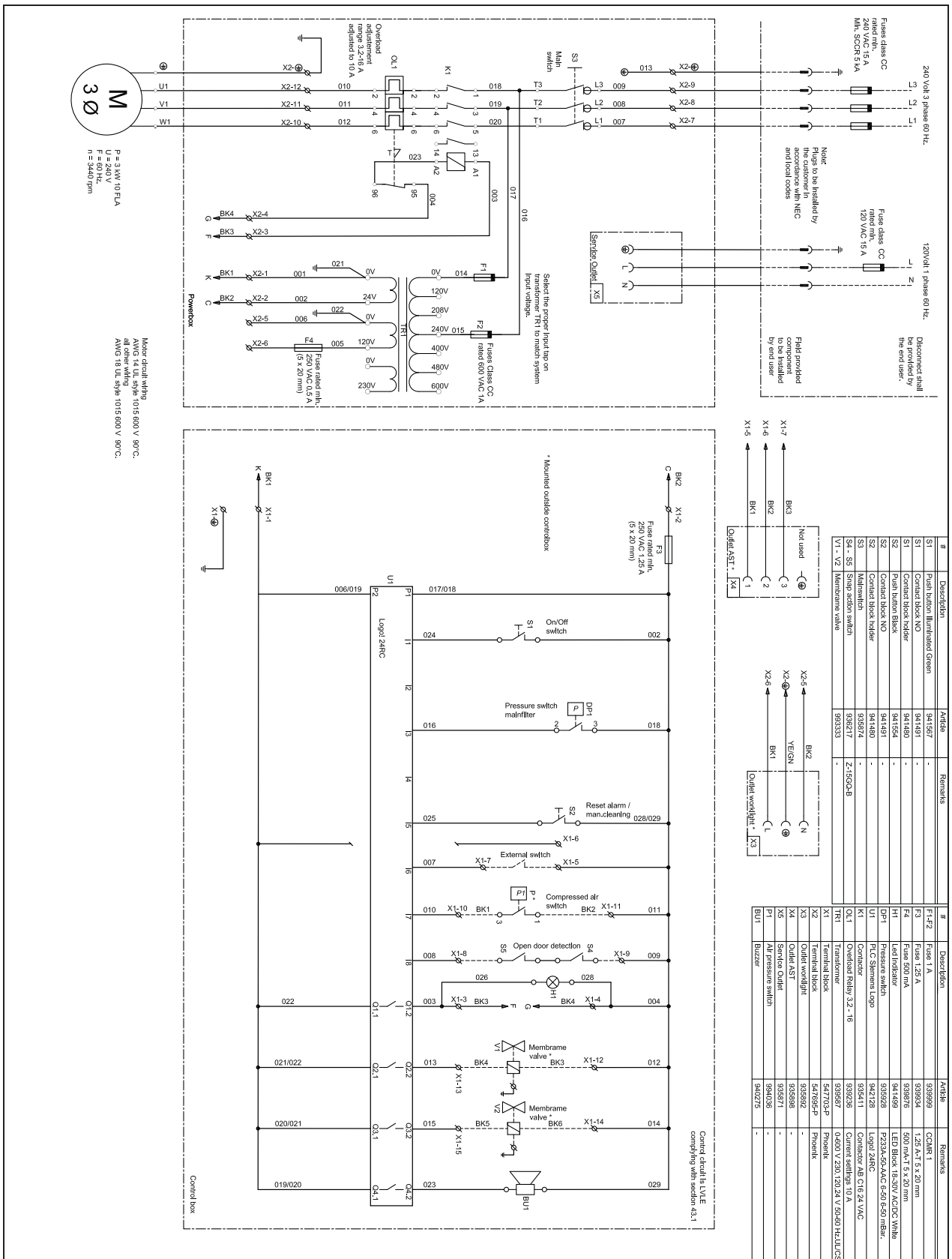

M 3Ø
P = 3 kW 4 FLA
U = 600 V
F = 60 Hz.
n = 3440 rpm
Motor circuit wiring
AWG 14 UL style 1015 600 V 90°C.
all other wiring
AWG 18 UL style 1015 600 V 90°C.
600 Volt 3 phase 60 Hz.
120Volt 1 phase 60 Hz.
Overload adjustement range 4 - 6.3 A adjuset to 4 A
Main switch
Fuses class CC rated min. 600 VAC 15 kA Min. SCCR 5 kA
Fuse class CC rated min. 120 VAC 15 A
Note: Plugs to be installed by qualified person in accordance with NEC and local codes
Disconnect shall be provided by the end user.
Field provided component to be installed by end user
Service Outlet X5
Powerbox
Fuses Class CC rated 600 VAC 1A
Select the proper input tap on transformer TR1 to match system input voltage.
Fuse rated min. 250 VAC 0,5 A (5 x 20 mm)
Control box
* Mounted outside controbox
Fuse rated min. 250 VAC 1,25 A (5 x 20 mm)
Logo! 24RC
On/Off switch
Pressure swtch mainfilter
Reset alarm / man.cleaning
External swtch
Compressed air switch
Open door detection
Membrame valve *
Membrame valve *
Not used
Outlet AST *
Outlet worklight *
Control circuit is LVLE complying with section 43.1

#	Description	Article	Remarks
S1	Push button Illuminated Green	941567	-
S1	Contact block NO	941491	-
S1	Contact block holder	941480	-
S1	Push button Black	941554	-
S2	Contact block NO	941491	-
S2	Contact block holder	941480	-
S3	Mainswitch	936874	-
S4 - S5	Snap action switch	936217	Z-15GQ-B
V1 - V2	Membrame valve	993333	-

#	Description	Article	Remarks
F1-F2	Fuse 1 A	939999	1.0 A Class-CC
F3	Fuse 1.25 A	939934	1.25 A-T 5 x 20 mm
F4	Fuse 500 mA	939876	500 mA-T 5 x 20 mm
H1	Led Indicator	941499	LED Block 18-30V AC/DC White
DP1	Pressure switch	935928	P233A-50-AAC 6-50 6-50 mBar.
U1	PLC Siemens Logo	942128	Logo! 24RC
K1	Contactor	935612	MC2A
OL1	Overload Relay 4,0 - 6,3 A	938236	Current settinge 4 A
TR1	Transformer	939587	0-460 V 230/120/24 V 50-60 Hz.UL/CSA
X1	Terminal block	547703-P	Phoenix
X2	Terminal block	547695-P	Phoenix
X3	Outlet worklight	935892	-
X4	Outlet AST	935898	-
X5	Service Outlet	935871	-
P1	Air pressure switch	984036	-
BU1	Buzzer	940275	-
R1	Varistor	-	S10K30

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

FIGURE F.7 – 548636 DOWNFLEX 400-MS/A (208-240V/3~/60HZ) (USA)

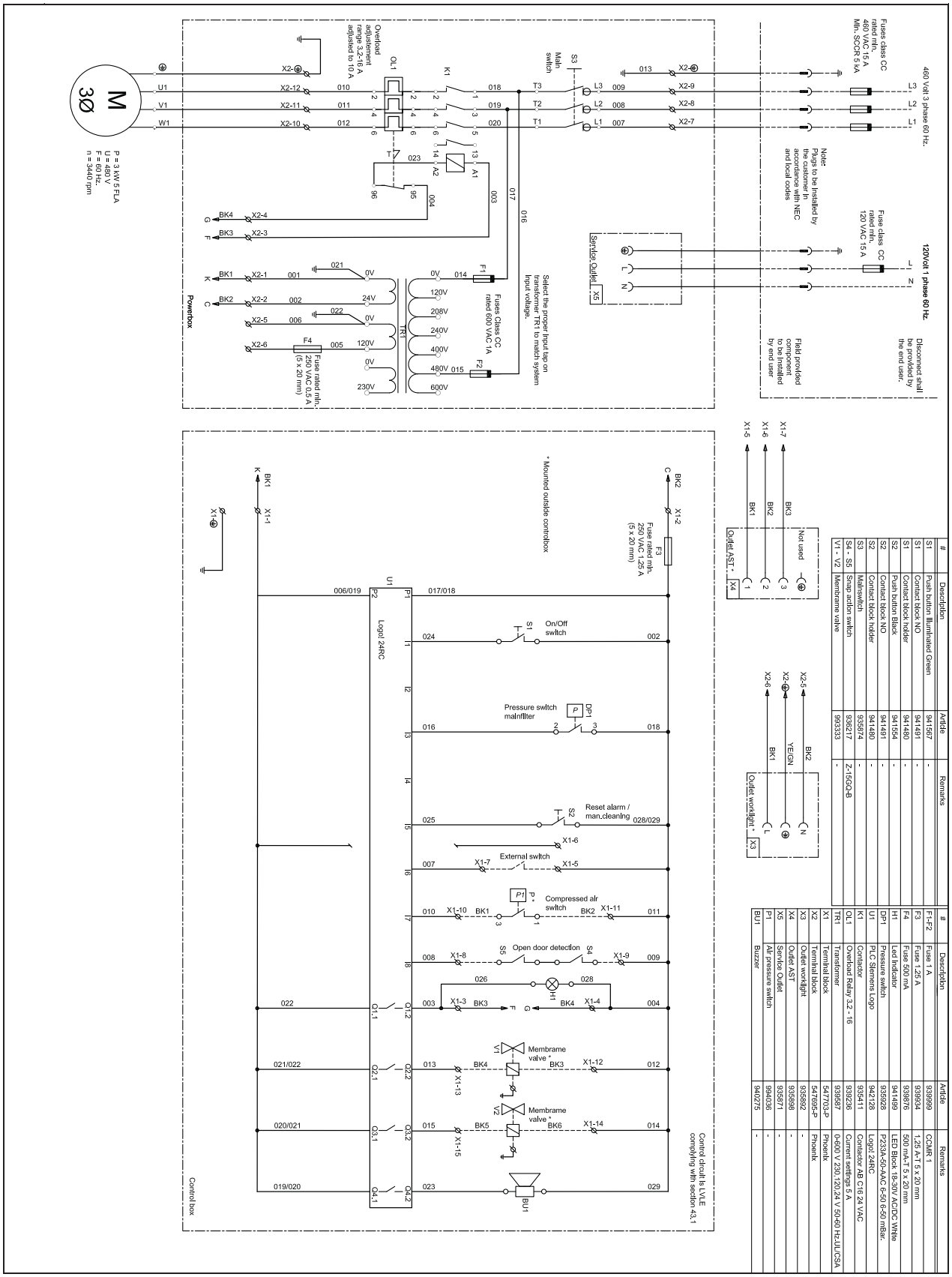

240 Volt 3 phase 60 Hz.
120Volt 1 phase 60 Hz.
Fuses class CC rated min. 240 VAC 15 A Min. SCCR 5 kA
Fuses class CC rated min. 120 VAC 15 A
Notes: Plugs to be installed by the customer in accordance with NEC and local codes
Disconnect shall be provided by the end user.
Field provided component to be installed by end user
Service Outlet X5
Overload adjustement range 3,2-16 A adjusted to 10 A
Main switch
Powerbox
Select the proper input tap on transformer TR1 to match system input voltage.
Fuses Class CC rated 600 VAC 1A
Fuse rated min. 250 VAC 0,5 A (5 x 20 mm)
P = 3 kW 10 FLA
U = 240 V
F = 60 Hz.
n = 3440 rpm
Motor circuit wiring AWG 12 UL style 1015 600 V 90°C. All other wiring AWG 18 UL style 1015 600 V 90°C.
* Mounted outside controlbox
Fuse rated min. 250 VAC 1,25 A (5 x 20 mm)
Logo! 24RC
On/Off switch
Pressure switch malnfiltter
Reset alarm / man.cleaning
External switch
Compressed air switch
Open door detection
Membrame valve *
Membrame valve *
Control box
Control circuit is LVLE complying with section 43.1
Not used
Outlet AST *
Outlet worklight *

#	Description	Article	Remarks
S1	Push button Illuminated Green	941567	-
S1	Contact block NO	941491	-
S1	Contact block holder	941480	-
S2	Push button Black	941554	-
S2	Contact block NO	941491	-
S2	Contact block holder	941480	-
S3	Mainswitch	935574	-
S4 - S5	Snap action switch	935217	-
V1 - V2	Membrane valve	993333	Z-15GQ-B

#	Description	Article	Remarks
F1-F2	Fuse 1 A	939999	CCMR 1
F3	Fuse 1,25 A	939934	1,25 A-T 5 x 20 mm
F4	Fuse 500 mA	939876	500 mA-T 5 x 20 mm
H1	Led Indicator	941499	LED Block 18-30V AC/DC White
DP1	Pressure switch	935928	P233A-5R-AAC 6-50 0-50 mBar.
U1	PLC Siemens Logo	942128	Logo! 24RC
K1	Contactor	935411	Contactor AB C16 24 VAC
OL1	Overload Relay 3,2 - 16	939236	Current settings 10 A
TR1	Transformer	939587	0-600 V 230,120,24 V 50-60 HZ,UL/CSA
X1	Terminal block	547703-P	Phoenix
X2	Terminal block	547695-P	Phoenix
X3	Outlet worklight	935892	-
X4	Outlet AST	935898	-
X5	Service Outlet	935871	-
P1	Air pressure switch	994036	-
BU1	Buzzer	940275	-

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

FIGURE F.8 – 548636 DOWNFLEX 400-MS/A (480V/3~/60HZ) (USA)

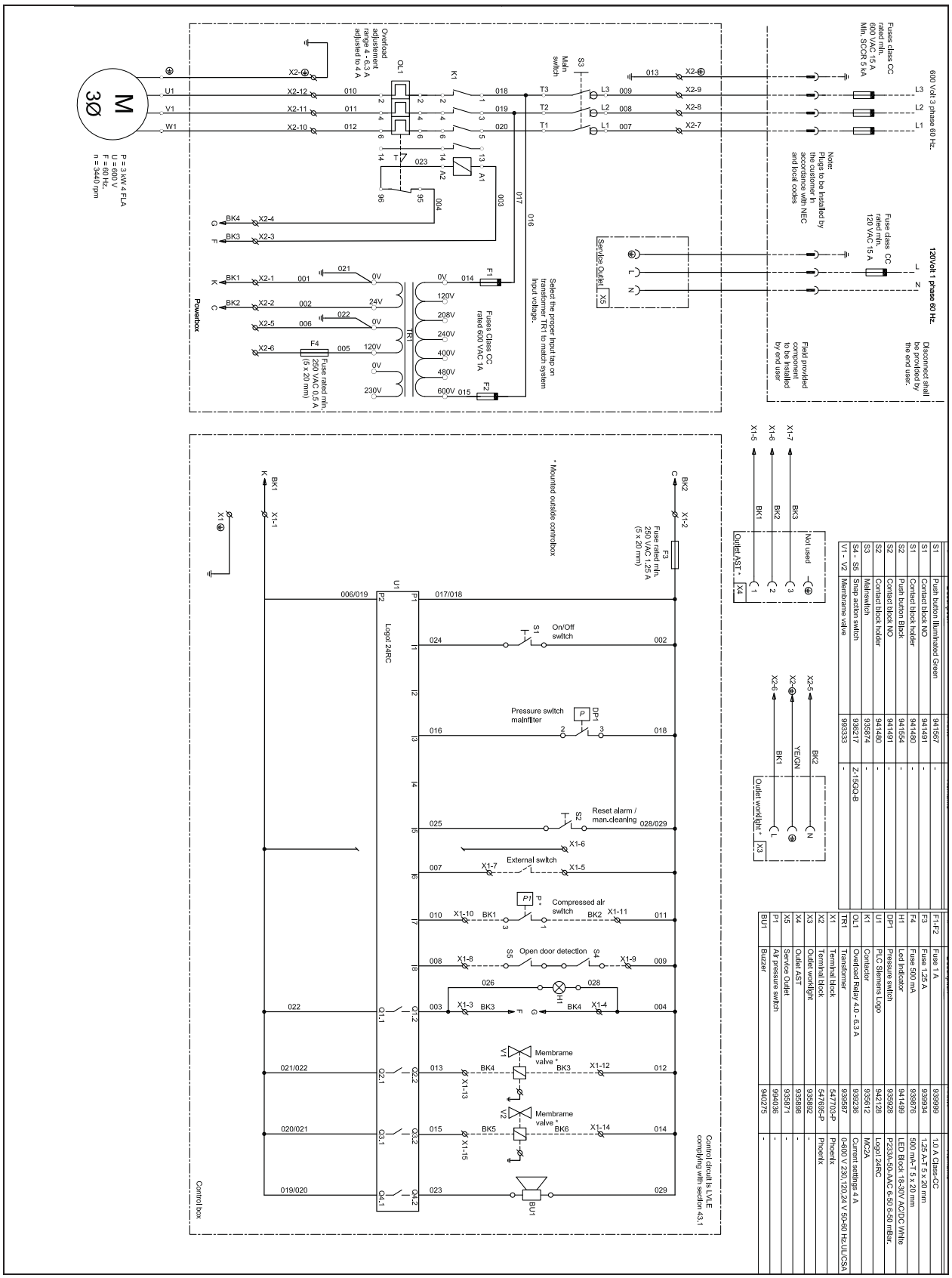

M 3Ø
P = 3 kW 5 FLA
U = 480 V
F = 60 Hz.
n = 3440 rpm
460 Volt 3 phase 60 Hz.
Fuses class CC rated min. 480 VAC 15 A Min. SCCR 5 kA
Overload adjustement range 3,2-16 A adjusted to 10 A
Main switch
Note: Plugs to be Installed by the customer in accordance with NEC and local codes
Fuse class CC rated min. 120 VAC 15 A
120Volt 1 phase 60 Hz.
Disconnect shall be provided by the end user.
Field provided component to be Installed by end user
Service Outlet
Powerbox
Fuses Class CC rated 600 VAC 1A
Select the proper input tap on transformer TR1 to match system input voltage.
Fuse rated min. 250 VAC 0,5 A (5 x 20 mm)
Control box
* Mounted outside controbox
Fuse rated min. 250 VAC 1,25 A (5 x 20 mm)
Logo! 24RC
On/Off switch
Pressure switch mainfilter
Reset alarm / man.cleaning
External switch
Compressed air switch
Open door detection
Membrame valve *
Membrame valve *
Outlet AST *
Not used
Outlet worklight *
Control circuit is LVLE complying with section 43.1

#	Description	Article	Remarks
S1	Push button Illuminated Green	941567	-
S1	Contact block NO	941491	-
S1	Contact block holder	941480	-
S1	Push button Black	941554	-
S2	Contact block NO	941491	-
S2	Contact block holder	941480	-
S3	Mainswitch	935874	-
S4 - S5	Snap action switch	938217	Z-16GQ-B
V1 - V2	Membrame valve	993333	-

#	Description	Article	Remarks
F1-F2	Fuse 1 A	939999	CC/MR 1
F3	Fuse 1,25 A	939934	1,25 A-T 5 x 20 mm
F4	Fuse 500 mA	939876	500 mA-T 5 x 20 mm
H1	Led Indicator	941499	LED Block 18-30V AC/DC White
DP1	Pressure switch	935928	P233A-S9-AAC 6-50 6-50 mBar.
U1	PLC Siemens Logo	942128	Logo! 24RC
K1	Contactor	935411	Contactor AB C16 24 VAC
OL1	Overload Relay 3,2 - 16	939236	Current settings 5 A
TR1	Transformer	939587	0-400 V 230 120,24 V 50-60 Hz.UL/CSA
X1	Termihal block	947703-P	Phoenix
X2	Termihal block	947695-P	Phoenix
X3	Outlet worklight	935892	-
X4	Outlet AST	935898	-
X5	Service Outlet	935871	-
P1	Air pressure switch	994036	-
BU1	Buzzer	940275	-

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

FIGURE F.9 – 548636 DOWNFLEX 400-MS/A (600V/3~/60HZ) (USA)


M 3Ø
P = 3 kW/ 4 FLA
U = 600 V
F = 60 Hz
n = 3440 rpm
600 Volt 3 phase 60 Hz.
120Volt 1 phase 60 Hz.
Fuses class CC rated min. 600 VAC 15 A Min. SCCR 5 kA
Fuse class CC rated min. 120 VAC 15 A
Note: Plug is to be installed by the customer in accordance with NEC and local codes
Disconnect shall be provided by the end user.
Field provided component to be installed by end user
Service Outlet
Overload adjustement range 4 - 6.3 A adjusted to 4 A
Main switch
Powerbox
Fuses Class CC rated 600 VAC 1A
Select the proper input tap on transformer TR1 to match system input voltage.
Fuse rated min. 250 VAC 0.5 A (5 x 20 mm)
Fuse rated min. 250 VAC 1.25 A (5 x 20 mm)
* Mounted outside controlbox
Logo! 24RC
On/Off switch
Pressure switch mainfilter
Reset alarm / man.cleaning
External switch
Compressed air switch
Open door detection
Membrame valve *
Outlet AST *
Not used
Outlet worklight *
Control box
Control circuit is LVLE complying with section 43.1

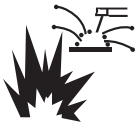
S1	Push button Illuminated Green	941567	-	
S1	Contact block NO	941491	-	
S1	Contact block holder	941480	-	
S2	Push button Black	941554	-	
S2	Contact block NO	941491	-	
S2	Contact block holder	941480	-	
S3	Mainswitch	935674	-	
S4 - S5	Snap action switch	938217	Z-15GQ-B	
V1 - V2	Membrame valve	993333	-	

F1-F2	Fuse 1 A	939999		1.0 A Class-CC
F3	Fuse 1.25 A	939934		1.25 A-T 5 x 20 mm
F4	Fuse 500 mA	939876		500 mA-T 5 x 20 mm
H1	Led Indicator	941499		LED Block 18-30V AC/DC White
DP1	Pressure switch	935928		P233A-50-AAC 6-50 6-50 mBar.
U1	PLC Siemens Logo	942128		Logo! 24RC
K1	Contactor	935612		MC2A
OL1	Overload Relay 4.0 - 6.3 A	939236		Current settings 4 A
TR1	Transformer	939587		0-400 V 230, 120,24 V 65-60 Hz.UL/CSA
X1	Terminal block	547703-P		Phoenix
X2	Terminal block	547695-P		Phoenix
X3	Outlet worklight	935892	-	
X4	Outlet AST	935898	-	
X5	Service Outlet	935871	-	
P1	Air pressure switch	994036	-	
BU1	Buzzer	940275	-	

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

NOTES

NOTES

			
WARNING	· Do not touch electrically live parts or electrode with skin or wet clothing. · Insulate yourself from work and ground.	· Keep flammable materials away.	· Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	· No toque las partes o los electrodos bajo carga con la piel o ropa mojada. · Aislese del trabajo y de la tierra.	· Mantenga el material combustible fuera del área de trabajo.	· Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	· Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. · Isolez-vous du travail et de la terre.	· Gardez à l'écart de tout matériel inflammable.	· Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	· Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! · Isolieren Sie sich von den Elektroden und dem Erdboden!	· Entfernen Sie brennbarres Material!	· Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	· Não toque partes elétricas e electrodos com a pele ou roupa molhada. · Isole-se da peça e terra.	· Mantenha inflamáveis bem guardados.	· Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。	● 燃えやすいものの側での溶接作業は絶対にしてはなりません。	● 目、耳及び身体に保護具をして下さい。
Chinese **警 告**	● 皮肤或濕衣物切勿接觸帶電部件及銲條。 ● 使你自己與地面和工件絕緣。	● 把一切易燃物品移離工作場所。	● 佩戴眼、耳及身體勞動保護用具。
Korean **위 험**	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	● 인화성 물질을 접근 시키지 마시요.	● 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic **تحذير**	● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل.	● ضع المواد القابلة للاشتعال في مكان بعيد.	● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

· Keep your head out of fumes. · Use ventilation or exhaust to remove fumes from breathing zone.	· Turn power off before servicing.	· Do not operate with panel open or guards off.	**WARNING**
· Los humos fuera de la zona de respiración. · Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	· Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	· No operar con panel abierto o guardas quitadas.	Spanish **AVISO DE PRECAUCION**
· Gardez la tête à l'écart des fumées. · Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	· Débranchez le courant avant l'entretien.	· N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French **ATTENTION**
· Vermeiden Sie das Einatmen von Schweibrauch! · Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	· Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	· Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German **WARNUNG**
· Mantenha seu rosto da fumaça. · Use ventilação e exhaustão para remover fumo da zona respiratória.	· Não opere com as tampas removidas. · Desligue a corrente antes de fazer serviço. · Não toque as partes elétricas nuas.	· Mantenha-se afastado das partes moventes. · Não opere com os paineis abertos ou guardas removidas.	Portuguese **ATENÇÃO**
● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	Japanese **注意事項**
●頭部遠離煙霧。 ●在呼吸區使用通風或排風器除煙。	●維修前切斷電源。	●儀表板打開或沒有安全罩時不準作業。	Chinese **警 告**
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Korean **위 험**
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهربائي قبل القيام بأية صيانة.	● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.	Arabic **تحذير**

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的説明以及應該使用的銀捍材料，並請遵守貴方的有関勞動保護規定。

이 제폼에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

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